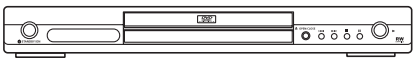
Pioneer sound.vision.soul

Service Manual



DV-470-S

ORDER NO.
RRV2959

DVD PLAYER

DV-470-S
DV-470-K

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Region No.	Serial No. Confirm 3rd & 4th alphabetical letters.
DV-470-S	WYXCN	AC220-240V	2	&&TE######$$
DV-470-S	WYXCN/FG	AC220-240V	2	&&TE######$$
DV-470-S	WVXCN	AC220-240V	2	&&TE######$$
DV-470-K	WYXCN	AC220-240V	2	&&TE######$$
DV-470-K	WYXCN/FG	AC220-240V	2	&&TE######$$

For details, refer to "Important symbols for good services".

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
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ⓒ**PIONEER CORPORATION 2004**

T-ZZE JUNE 2004 printed in Japan

SAFETY INFORMATION

This service manual is intended for qualified service technicians ; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trainedto properly and safely repair complex products such as those covered by this manual.Improperly performed repairs can adversely affect the safety and reliability of the product and mayvoid the warranty. If you are not qualified to perform the repair of this product properly and safely, youshould not risk trying to do so and refer the repair to a qualified service technician.

WARNING !

THE AEL (ACCESSIBLE EMISSION LEVEL) OF THE LASER POWER OUTPUT IS LESS THAN CLASS 1 BUT THE LASER COMPONENT IS CAPABLE OF EMITTING RADIATION EXCEEDING THE LIMIT FOR CLASS 1.
A SPECIALLY INSTRUCTED PERSON SHOULD DO SERVICING OPERATION OF THE APPARATUS.

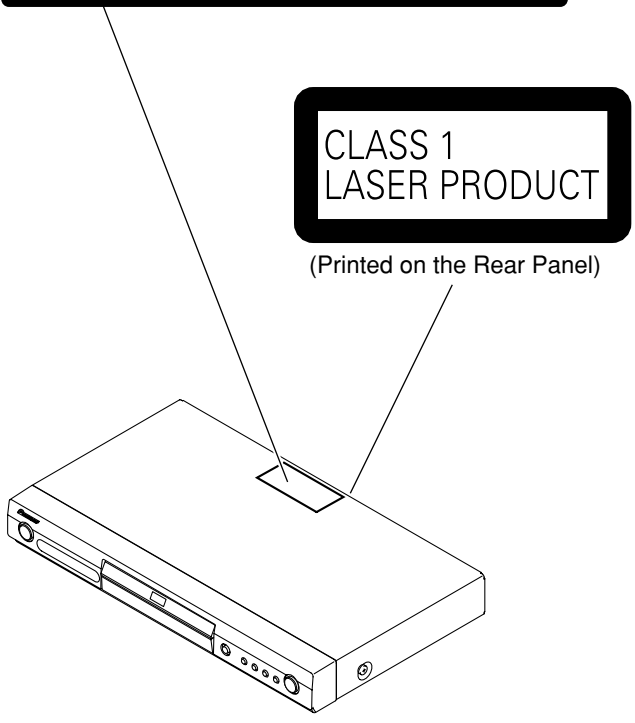
LASER DIODE CHARACTERISTICS

FOR DVD :	MAXIMUM OUTPUT POWER : 5 mW
	WAVELENGTH : 650 nm
FOR CD :	MAXIMUM OUTPUT POWER : 5 mW
	WAVELENGTH : 780 nm

LABEL CHECK

CAUTION	: VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
VORSICHT	: SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG, WENNABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETZEN!
ADVARSEL	: SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARNING	: SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD BETRAKTA EJ STRÅLEN.
VARO!	: AVATTAESSA ALTISTUT NÄKYVÄ JA NÄKYMÄTTÖMÄLLE LASERSATEIL YLLE. ÄLÄ KATSO SÄTEESEN.
CUIDADO	: RADIACIÓN LÁSER VISIBLE E INVISIBLE AL ESTAR ABIERTO. EVITAR EXPOSICIÓN AL RAYO.

VRW1872



(Printed on the Rear Panel)

Additional Laser Caution

1. Laser Interlock Mechanism
   • Loading switch (S101 on the LOAB Assy) is used for interlock mechanism of the laser.
   When this switch turned ON in SW2 (CLOSE) side (OPEN signal is 0V and CLOSE signal is 3.5V), a laser becomes the status which can completely oscillation.
   Furthermore, the laser completely oscillates in the disc judgment and disc playback.
   When player is power ON state and laser diode is not completely oscillating, 780nm laser diode is always oscillating by half power.
   • Laser diode is driving with Q7 (650nm LD) and Q8 (780nm LD) on the DVDM Assy.
   Therefore, when short-circuit between the emitter and collector of these transistors or the base voltage is supplied for transistors turn on, the laser oscillates. (failure mode)
   • In the test mode ∗ , there is the mode that the laser oscillates except for the disc judgment and playback. LD ON mode in the test mode oscillates with the laser forcibly.
   The interlock mechanism mentioned above becomes invalid in this mode.

2. When the cover is open, close viewing through the objective lens with the naked eye will cause exposure to the laser beam.

∗ : See page 47.

[Important symbols for good services]
In this manual, the symbols shown-below indicate that adjustments, settings or cleaning should be made securely.
When you find the procedures bearing any of the symbols, be sure to fulfill them:

1. Product safety

You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

2. Adjustments

To keep the original performances of the product, optimum adjustments or specification confirmation is indispensable. In accordance with the procedures or instructions described in this manual, adjustments should be performed.

3. Cleaning

For optical pickups, tape-deck heads, lenses and mirrors used in projection monitors, and other parts requiring cleaning, proper cleaning should be performed to restore their performances.

4. Shipping mode and shipping screws

To protect the product from damages or failures that may be caused during transit, the shipping mode should be set or the shipping screws should be installed before shipping out in accordance with this manual, if necessary.

5. Lubricants, glues, and replacement parts

Appropriately applying grease or glue can maintain the product performances. But improper lubrication or applying glue may lead to failures or troubles in the product. By following the instructions in this manual, be sure to apply the prescribed grease or glue to proper portions by the appropriate amount.For replacement parts or tools, the prescribed ones should be used.

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1. SPECIFICATIONS

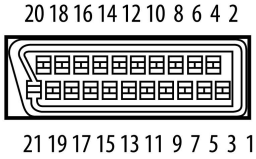
Specifications

General

System . . . . . DVD player
Power requirements . . .AC 220–240 V, 50/60 Hz
Power consumption . . . . . 12 W
Power consumption (standby) . . . . . .0.12 W
Weight . . . . . .2.1 kg
Dimensions. . 420 (W) x 55 (H) x 243 (D) mm
Operating temperature . . . . . +5°C to +35°C
Operating humidity . . . . . 5% to 85%
(no condensation)

AV connector output

AV Connector (21-pin connector assignment)
AV connector output . . . . . .21-pin connector
This connector provides the video and audio signals for connection to a compatible colour TV or monitor.



PIN no.
1. . . . . Audio 2/R out
3. . . . . .Audio 1/L out
4. . . . . .GND
7 . . . . . B out
8. . . . . Status
11 . . . . . G out
15 . . . . . R or C out
17. . . . . .GND
19. . . . . Video out or Y out
21. . . . . .GND

Component video output

Y (luminance) - Output level . . . . . 1 Vp-p (75 Ω)
P_B (color) - Output level . . . . . 0.7 Vp-p (75 Ω)
P_R (color) - Output level . . . . . 0.7 Vp-p (75 Ω)
Jack. . . . . RCA

S-video output

Y (luminance) - Output level . . . . . 1 Vp-p (75 Ω)
C (color) - Output level . . . . . .286 mVp-p (75 Ω)
Jack . . . . . S-video

Video output

Output level . . . . . 1 Vp-p (75 Ω)
Jack . . . . . .RCA

Audio output (2 stereo pair)

Output level. . . . . During audio output
200 mVrms (1 kHz, –20 dB)
Number of channels 2
Jacks . . . . . .RCA

Digital audio characteristics

Frequency response . . . . . 4 Hz to 44 kHz
(DVD fs: 96 kHz)

S/N ratio . . . . . .115 dB
Dynamic range . . . . . .101 dB
Total harmonic distortion. . . . . 0.0020 %
Wow and flutter . . . . . .Limit of measurement
(±0.001% W. PEAK) or lower

Digital output

Coaxial digital output . . . . . .RCA jack
Optical digital output . . . . . .Optical digital jack

Accessories

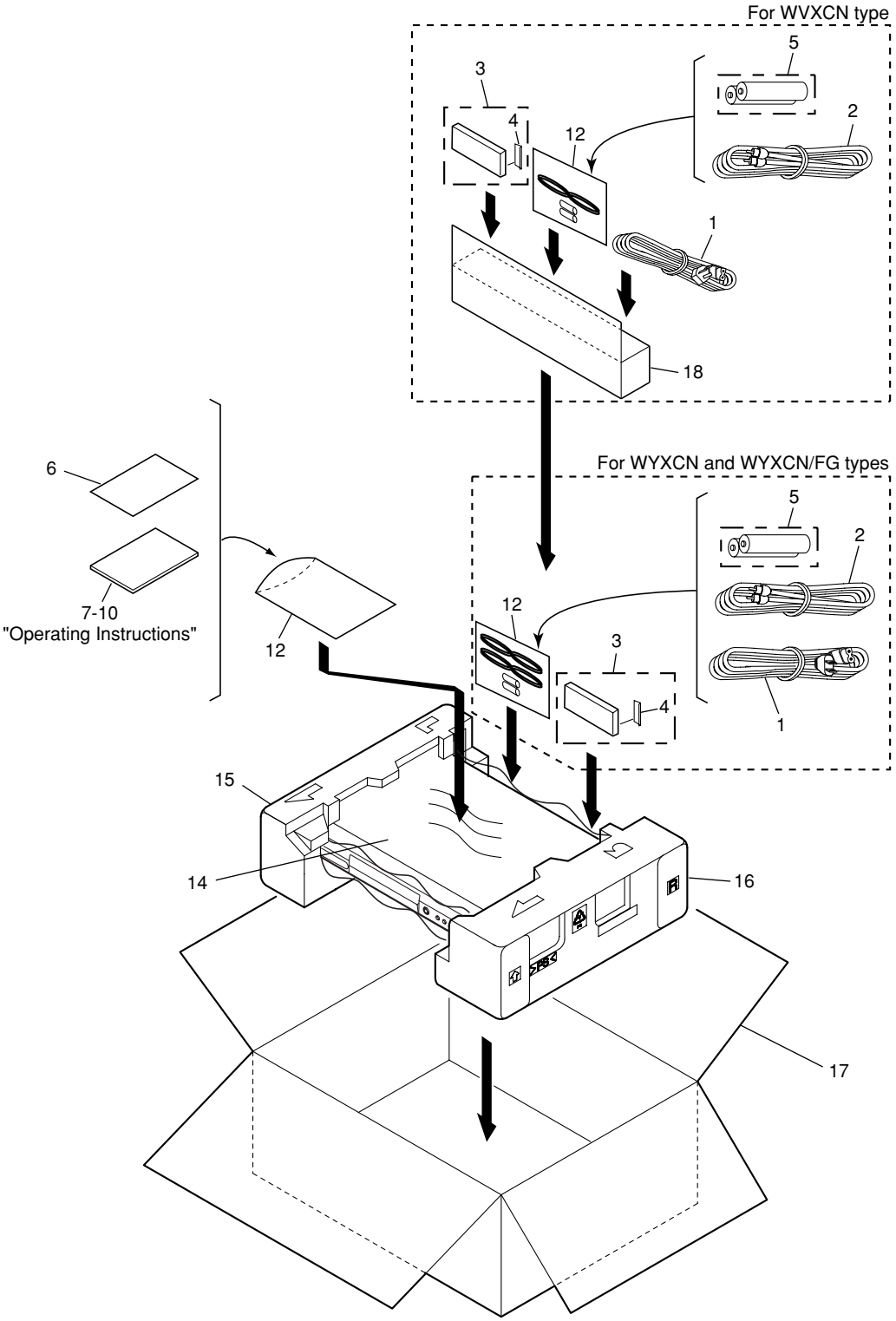
Audio/video cable. 1
Power cable. 1
Remote control 1
AA/R6P dry cell batteries 2
Warranty card 1
Operating Instructions

The specifications and design of this product are subject to change without notice, due to improvement.

2. EXPLODED VIEWS AND PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

2.1 PACKING



PACKING parts List

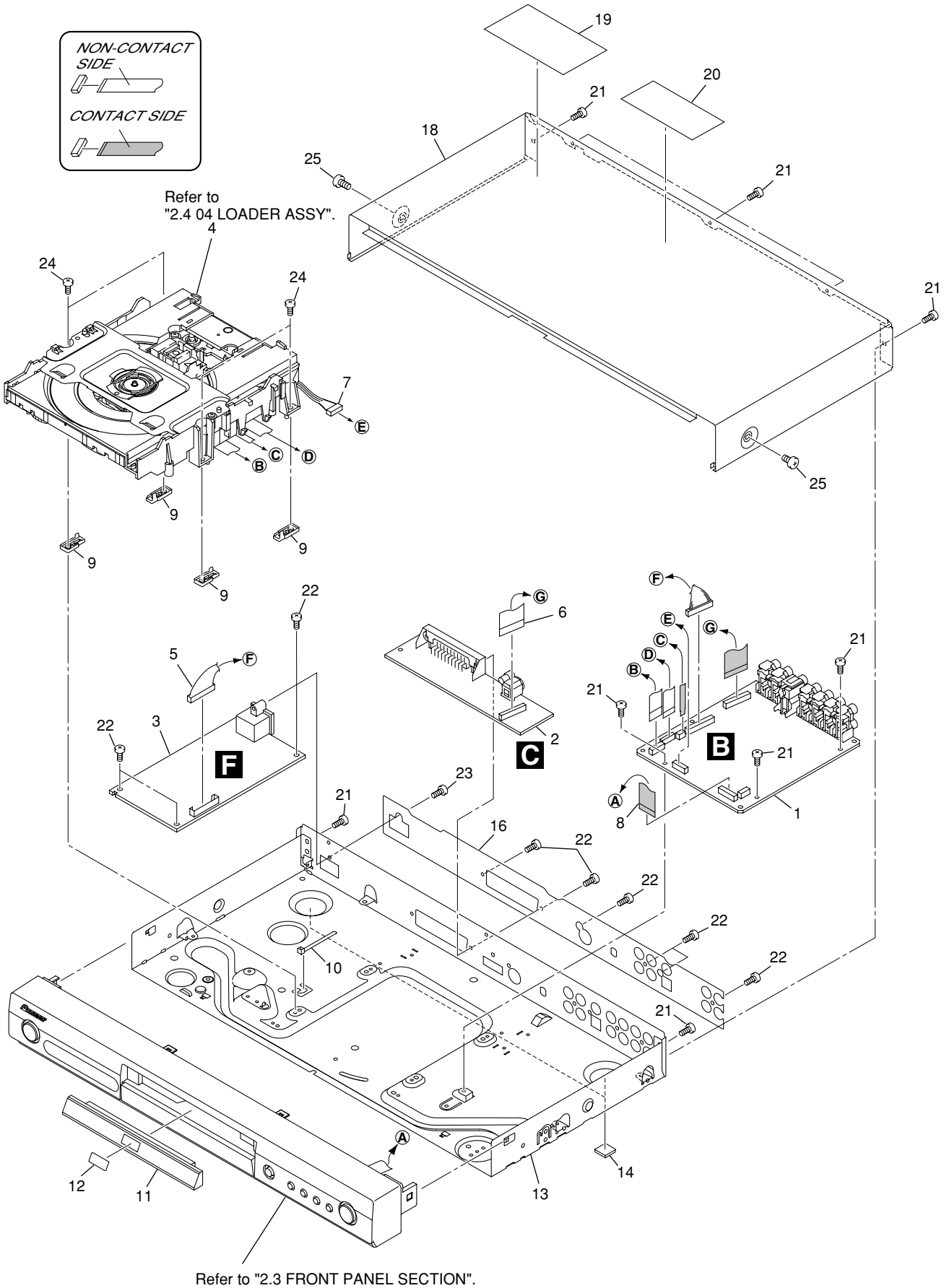
Mark	No.	Description	Part No.
⚠	1	Power Cable	See Contrast table(2)
	2	Audio/Video Cable	VDE1078
	3	Remote Control	VXX2913
	4	Battery Cover	VNK4997
NSP	5	Dry Cell Battery (AA,R6P)	VEM1010
NSP	6	Warranty Card	ARY7065
	7	Operating Instructions (English)	See Contrast table(2)
	8	Operating Instructions (English/Italian)	See Contrast table(2)
	9	Operating Instructions (French/German)	See Contrast table(2)
	10	Operating Instructions (Spanish/Dutch)	See Contrast table(2)
	11	• • • • •	
	12	Polyethylene bag B5	VHL1051
	13	• • • • •	
	14	Polyethylene Bag	VHL1076
	15	Pad L	VHA1358
	16	Pad R	VHA1359
	17	Packing Case	See Contrast table(2)
	18	Accessory Box	See Contrast table(2)

(2) CONTRAST TABLE

DV-470-S/WYXCN, WYXCN/FG, WVXCN, DV-470-K/WYXCN and WYXCN/FG are constructed the same except for the following:

Mark	No.	Symbol and Description	DV-470-S/ WYXCN	DV-470-S/ WYXCN/FG	DV-470-S/ WVXCN	DV-470-K/ WYXCN	DV-470-K/ WYXCN/FG
⚠	1	Power cable	ADG1154	ADG1154	ADG1156	ADG1154	ADG1154
	7	Operating Instructions (English)	Not used	Not used	VRB1346	Not used	Not used
	8	Operating Instructions (English/Italian)	VRD1195	Not used	Not used	VRD1195	Not used
	9	Operating Instructions (French/German)	VRD1196	VRD1196	Not used	VRD1196	VRD1196
	10	Operating Instructions (Spanish/Dutch)	VRD1197	Not used	Not used	VRD1197	Not used
	17	Packing Case	VHG2540	VHG2542	VHG2541	VHG2543	VHG2544
	18	Accessory Box	Not used	Not used	VHC1114	Not used	Not used

2.2 EXTERIOR SECTION



EXTERIOR SECTION parts List

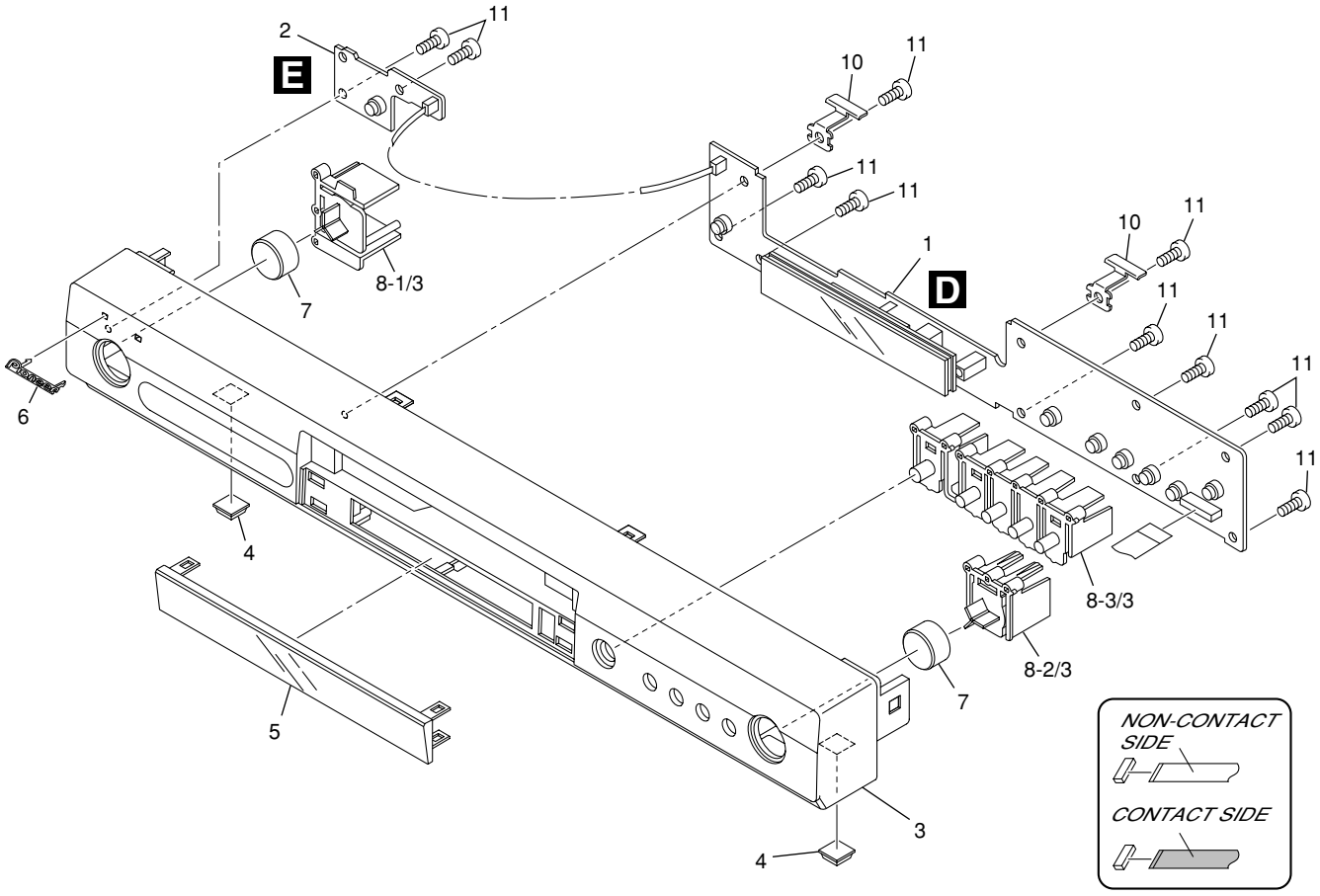
Mark	No.	Description	Part No.
	1	DVDM Assy	VWS1585
	2	JCKB Assy	VWV1995
⚠	3	POWER SUPPLY Unit	VWR1377
NSP	4	04 LOADER Assy	VWT1210
	5	Connector Assy (13P)	VKP2320
	6	Flexible Cable (17P)	VDA1994
	7	Connector Assy (5P)	VKP2324
	8	Flexible Cable (15P)	VDA1991
	9	Adapter 2	VNL1967
	10	Binder	VEC2414
	11	Tray Panel	See Contrast table(2)
	12	DVD A/V Badge	See Contrast table(2)
NSP	13	Base Chassis	VNA2693
	14	Rubber Foot	VEB1349
	15	• • • • •	
	16	Rear Sheet	See Contrast table(2)
	17	• • • • •	
	18	Bonnet	See Contrast table(2)
	19	WY label	VRW2138
	20	Caution Label	VRW1872
	21	Screw	BBZ30P060FNI
	22	Screw	BBZ30P080FNI
	23	Screw	PPZ30P080FNI
	24	Screw	BBZ30P100FNI
	25	Screw	See Contrast table(2)

(2) CONTRAST TABLE

DV-470-S/WYXCN, WYXCN/FG, WVXCN, DV-470-K/WYXCN and WYXCN/FG are constructed the same except for the following:

Mark	No.	Symbol and Description	DV-470-S/ WYXCN	DV-470-S/ WYXCN/FG	DV-470-S/ WVXCN	DV-470-K/ WYXCN	DV-470-K/ WYXCN/FG
	11	Tray Panel	VNK5411	VNK5411	VNK5411	VNK5413	VNK5413
	12	DVD A/V Badge	VAM1135	VAM1135	VAM1135	VAM1120	VAM1120
	16	Rear Sheet	VRW2135	VRW2135	VRW2135	VRW2136	VRW2136
	18	Bonnet	VNA2677	VNA2677	VNA2677	VNA2678	VNA2678
	25	Screw	BBZ30P060FNI	BBZ30P060FNI	BBZ30P060FNI	BBZ30P060FBN	BBZ30P060FBN

2.3 FRONT PANEL SECTION



FRONT PANEL SECTION parts List

Mark	No.	Description	Part No.
	1	FLKY Assy	VWG2511
	2	PWSB Assy	VWG2482
	3	Front Panel	See Contrast table(2)
	4	Rubber Foot	VEB1349
	5	FL Lens	VNK5414
	6	Pioneer Name Plate	See Contrast table(2)
	7	Key Top	See Contrast table(2)
	8	Main Key	See Contrast table(2)
	9	• • • • •	
	10	FP Angle	VNE2332
	11	Screw	PPZ30P080FNI

(2) CONTRAST TABLE

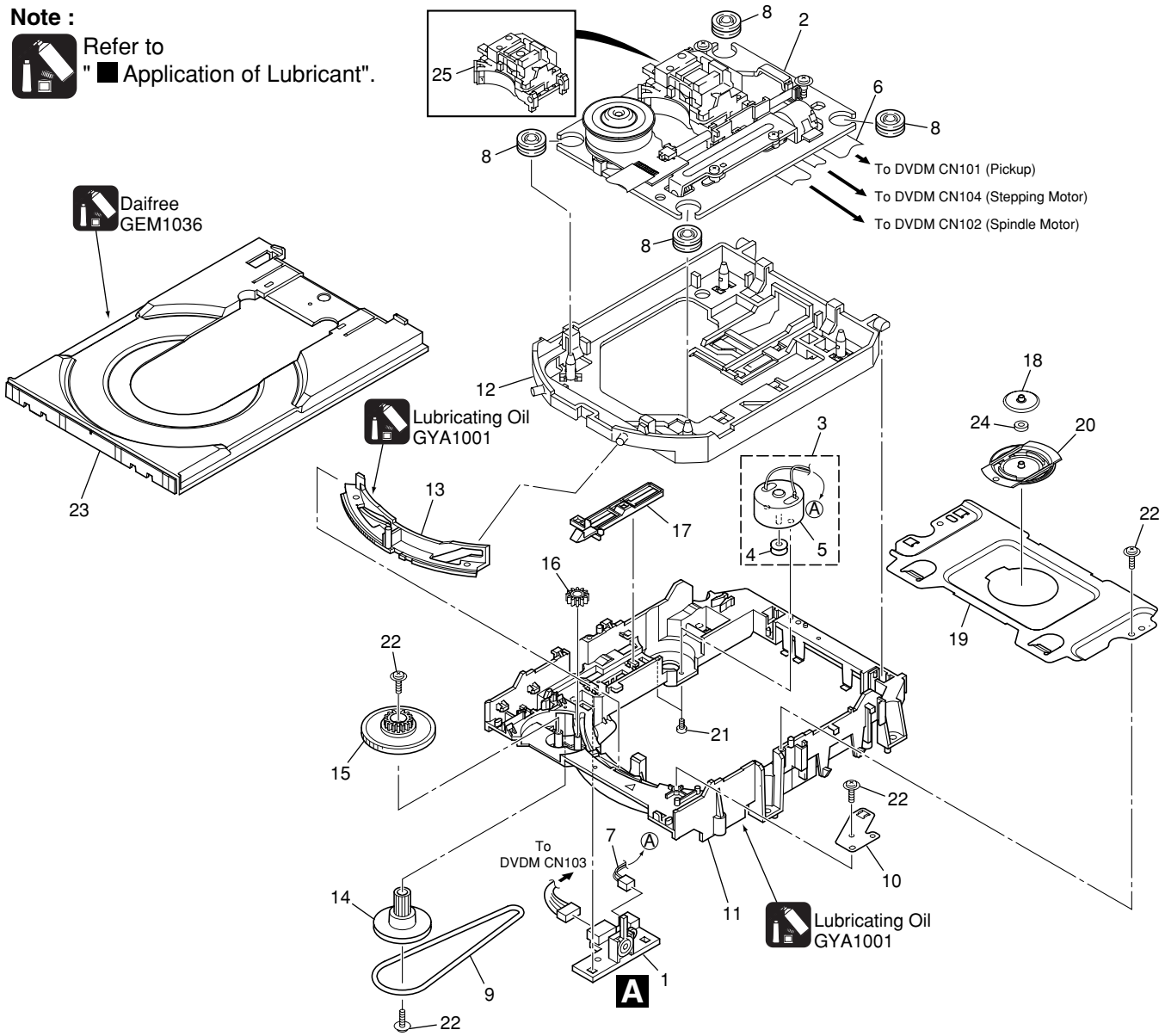
DV-470-S/WYXCN, WYXCN/FG, WVXCN, DV-470-K/WYXCN and WYXCN/FG are constructed the same except for the following:

Mark	No.	Symbol and Description	DV-470-S/ WYXCN	DV-470-S/ WYXCN/FG	DV-470-S/ WVXCN	DV-470-K/ WYXCN	DV-470-K/ WYXCN/FG
	3	Front Panel	VNK5610	VNK5610	VNK5610	VNK5611	VNK5611
	6	Pioneer Name Plate	VAM1129	VAM1129	VAM1129	VAM1130	VAM1130
	7	Key Top	VNK5410	VNK5410	VNK5410	VNK5409	VNK5409
	8	Main Key	VNK5404	VNK5404	VNK5404	VNK5406	VNK5406

2.4 04 LOADER ASSY

Note :

Refer to
" ■ Application of Lubricant".

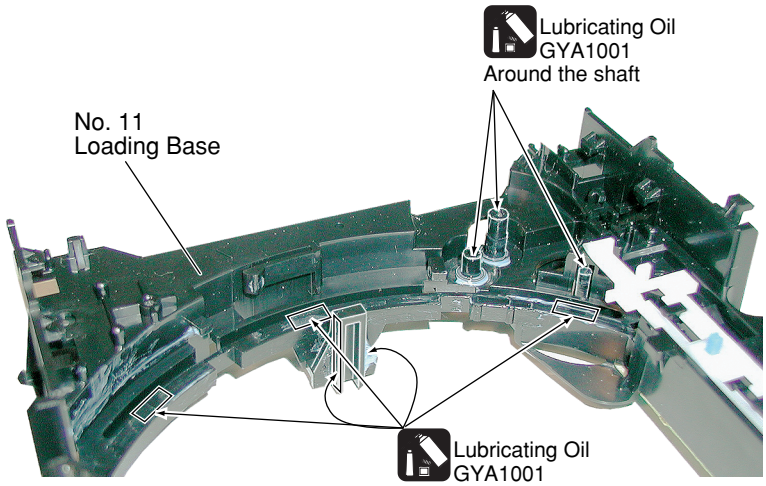


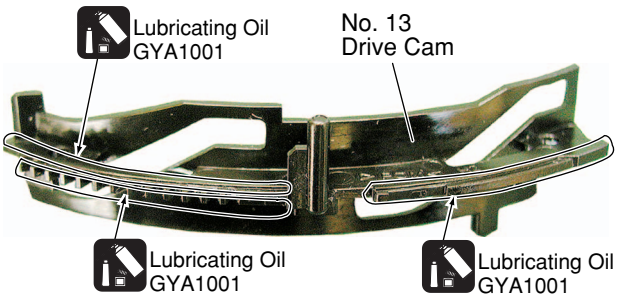
04 LOADER ASSY parts List

Mark	No.	Description	Part No.
NSP	1	LOAB Assy	VWG2346
	2	Traverse Mecha. Assy-S	DXX2536
	3	Loading Motor Assy	VXX2912
	4	Motor Pulley	PNW1634
NSP	5	Motor	VXM1107
	6	Flexible Cable (24P)	VDA1990
	7	Connector Assy 2P	VKP2325
	8	Floating Rubber	VEB1351
	9	Belt	VEB1358
	10	Stabilizer	VNE2253
	11	Loading Base	VNL1917
	12	Float Base 04	VNL1968
	13	Drive Cam	VNL1919
	14	Gear Pulley	VNL1921
	15	Loading Gear	VNL1922

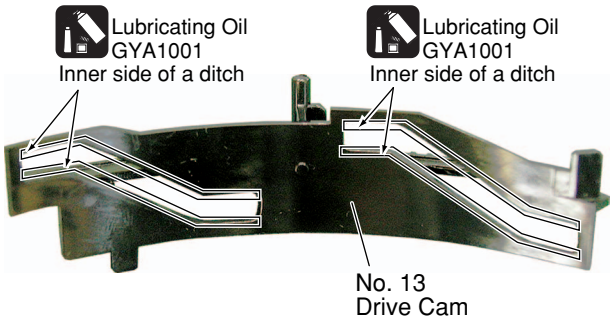
Mark	No.	Description	Part No.
	16	Drive Gear	VNL1923
	17	SW Lever	VNL1925
	18	Clamper Plate 04	VNE2342
	19	Bridge 04	VNE2343
	20	Clamper 04	VNL1969
	21	Screw	JGZ17P028FNI
	22	Screw	VBA1093
	23	Tray	VNL1920
	24	Clamp Magnet	VMG1029
	25	03 SD Pickup Assy-S	OXX8005

Application of Lubricant

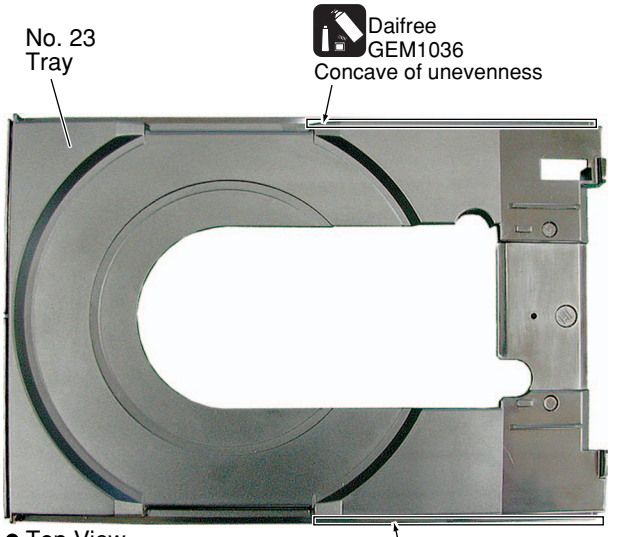




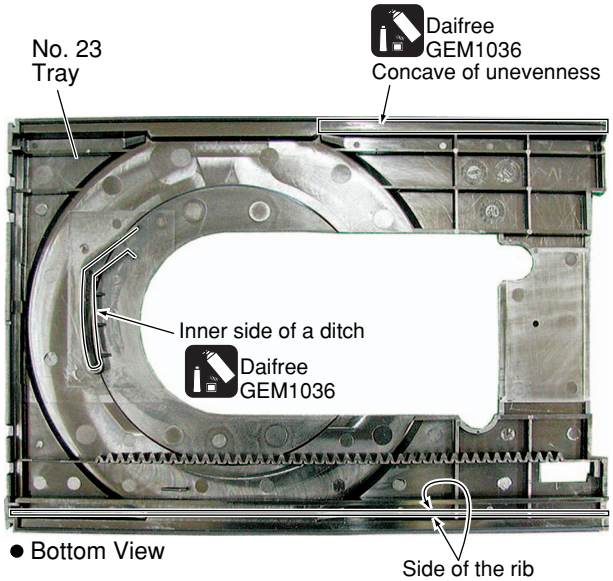
● Front View



● Rear View



● Top View

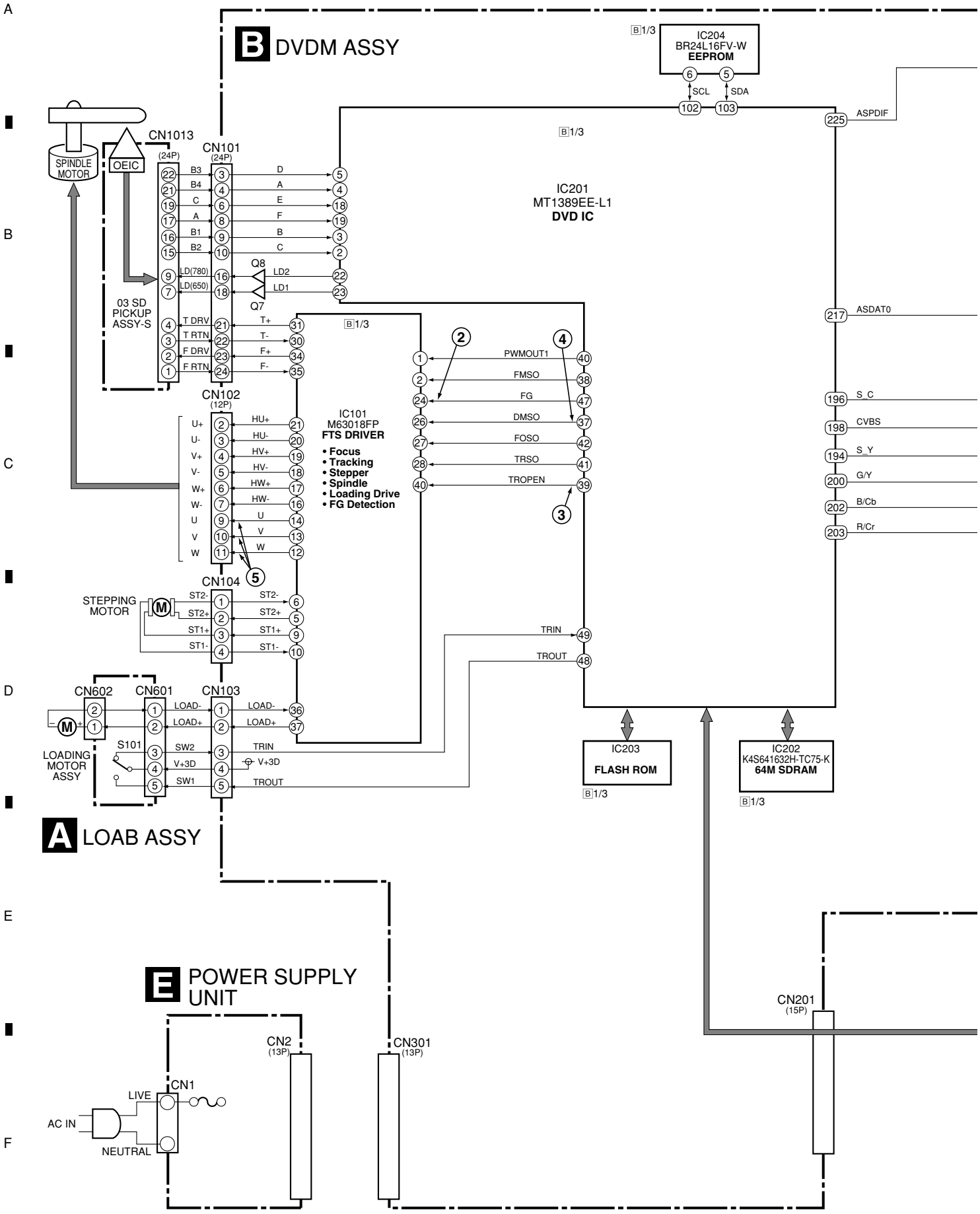


● Bottom View

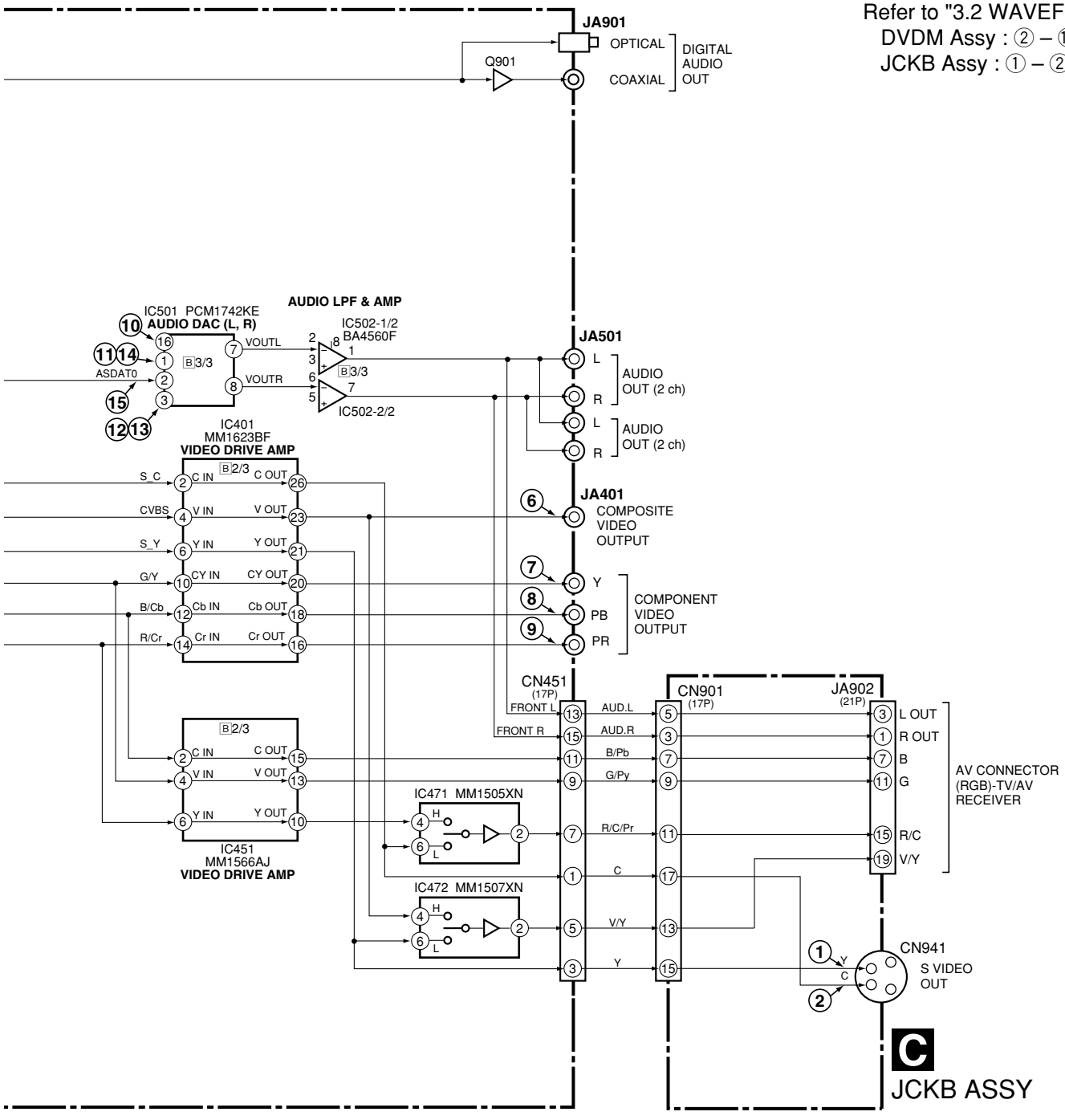
3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

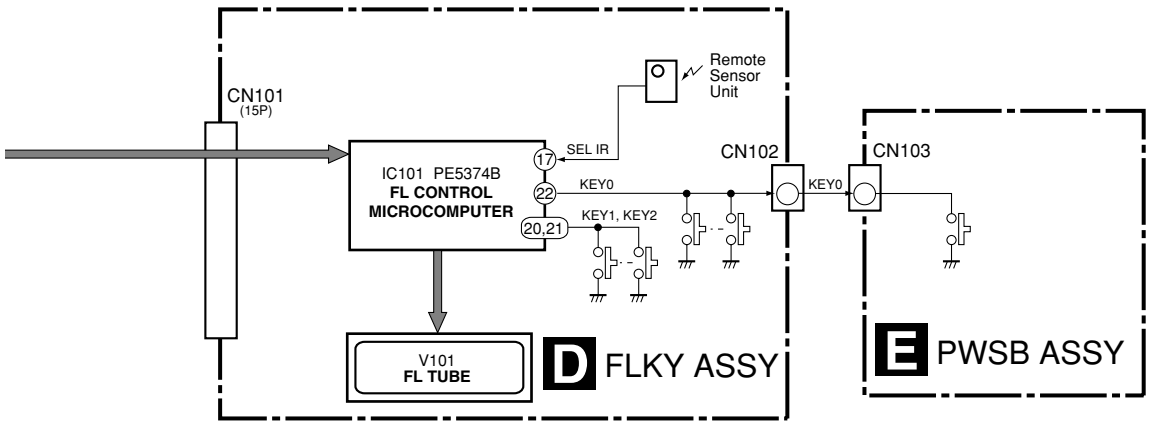
3.1 BLOCK DIAGRAM

3.1.1 SIGNAL ROUTE BLOCK DIAGRAM

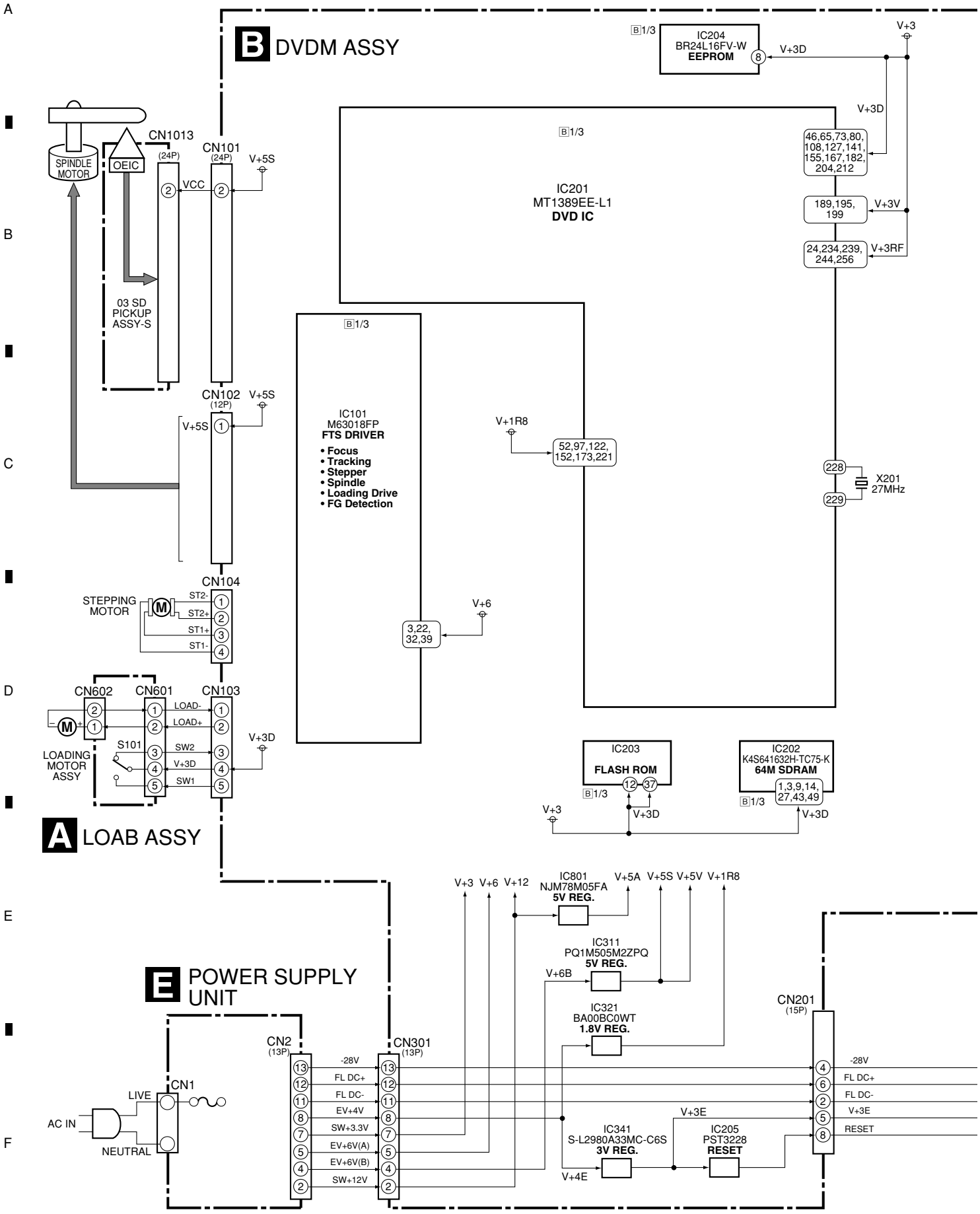


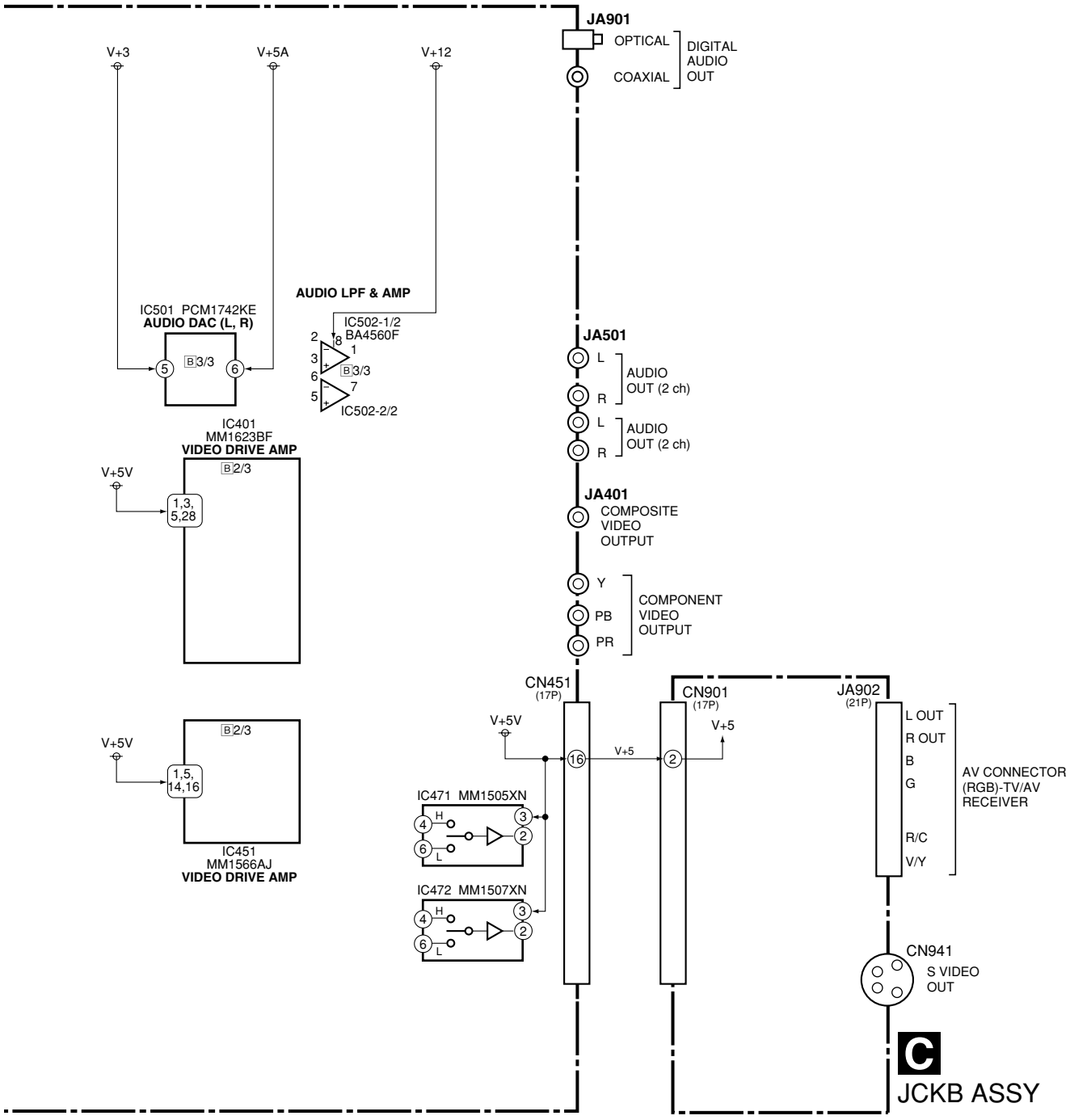
Refer to "3.2 WAVEFORMS".
DVDM Assy : ② – ⑮
JCKB Assy : ① – ②

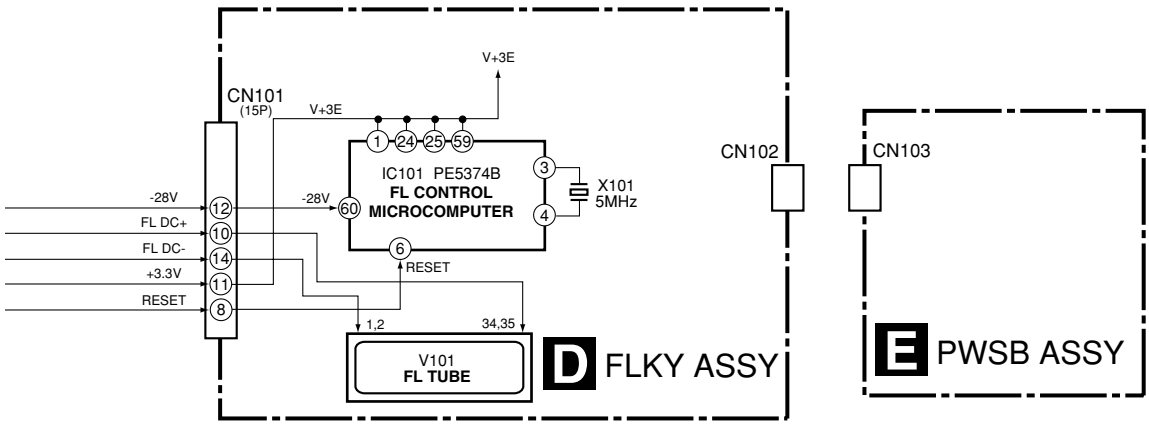




3.1.2 POWER SUPPLY BLOCK DIAGRAM




JA901
OPTICAL
COAXIAL
DIGITAL AUDIO OUT
V+3
V+5A
V+12
AUDIO LPF & AMP
IC501 PCM1742KE
AUDIO DAC (L, R)
IC502-1/2
BA4560F
IC502-2/2
JA501
L
R
AUDIO OUT (2 ch)
L
R
AUDIO OUT (2 ch)
IC401
MM1623BF
VIDEO DRIVE AMP
V+5V
JA401
COMPOSITE VIDEO OUTPUT
Y
PB
PR
COMPONENT VIDEO OUTPUT
CN451
(17P)
CN901
(17P)
JA902
(21P)
V+5V
V+5
L OUT
R OUT
B
G
R/C
V/Y
AV CONNECTOR (RGB)-TV/AV RECEIVER
IC471 MM1505XN
IC472 MM1507XN
CN941
S VIDEO OUT
IC451
MM1566AJ
VIDEO DRIVE AMP
C
JCKB ASSY


CN101
(15P)
V+3E
IC101 PE5374B
FL CONTROL MICROCOMPUTER
X101
5MHz
-28V
FL DC+
FL DC-
+3.3V
RESET
V101
FL TUBE
D
FLKY ASSY
CN102
CN103
E
PWSB ASSY

3.2 WAVEFORMS

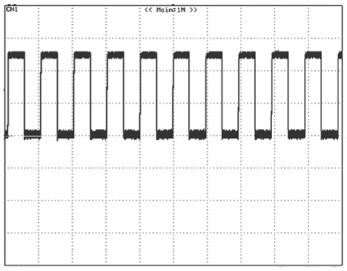
Note : The encircled numbers denote measuring point in the schematic diagram.

B DVDM ASSY

Measurement condition ;

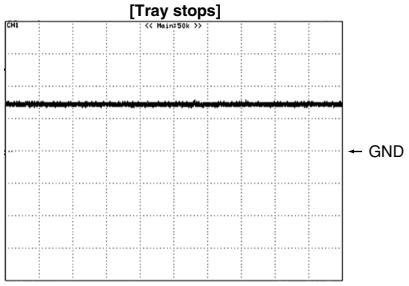
No. 2 to 9 : reference A1 (DVD), T2-chp 19, Color-bar
No. 10 to 15 : reference A1 (DVD), T2-chp 1

② IC101-pin 24 [FG]
V: 1V/div. H: 5msec/div.

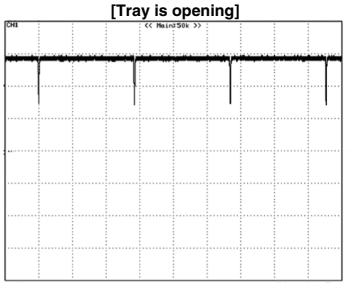


③ IC201-pin 39 [TROPENPWM]
V: 1V/div. H: 5µsec/div.

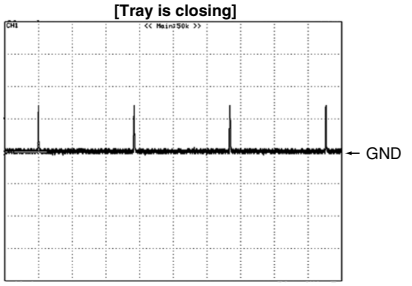
[Tray stops]



[Tray is opening]

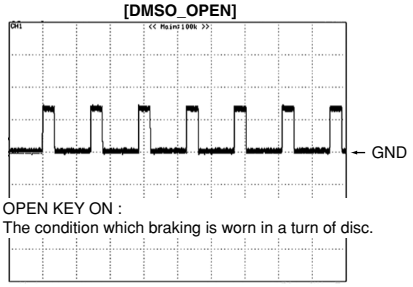


[Tray is closing]



④ Foot of R201 (IC201-pin 37) [DMSO]
V: 1V/div. H: 10µsec/div.

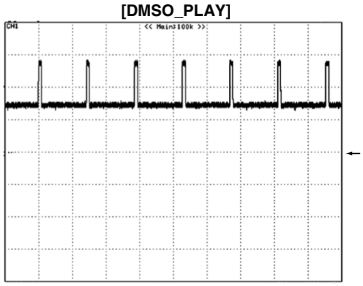
[DMSO_OPEN]



OPEN KEY ON :
The condition which braking is worn in a turn of disc.

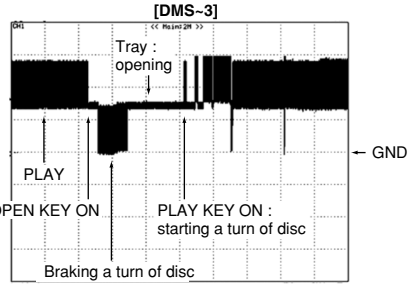
V: 1V/div. H: 10µsec/div.

[DMSO_PLAY]

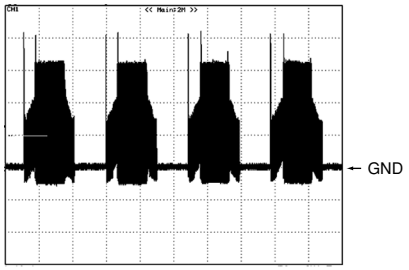


V: 1V/div. H: 2sec/div.

[DMS~3]



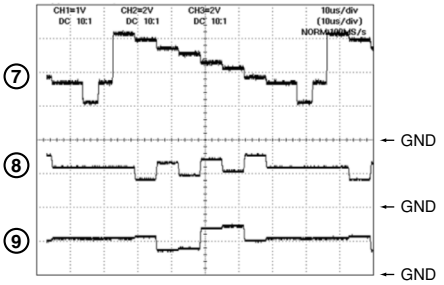
⑤ CN102-pin 11, 10, 9 (IC101-pin 14, 13, 12) [SPINDLE (WVU)]
V: 2V/div. H: 2msec/div.



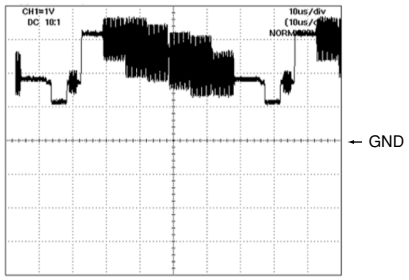
⑦ JA401 [Component Video Out-Y]
V: 1V/div. H: 10µsec/div.

⑧ JA401 [Component Video Out-PB]
V: 2V/div. H: 10µsec/div.

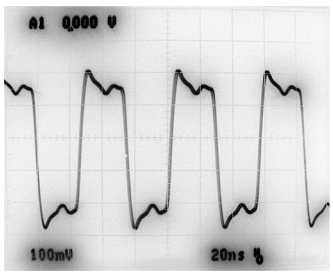
⑨ JA401 [Component Video Out-PR]
V: 2V/div. H: 10µsec/div.



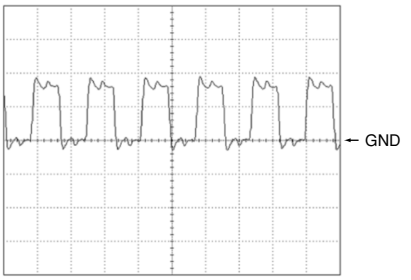
⑥ JA401 [Composite Video Out]
V: 1V/div. H: 10µsec/div.



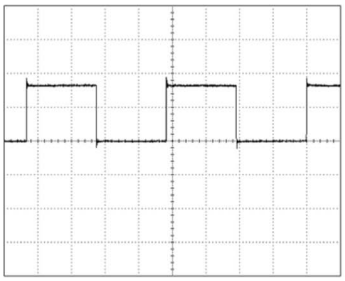
⑩ IC501-pin 16 [PCMCK]
V: 100mV/div. H: 20nsec/div. fs=48kHz



⑪ IC501-pin 1 [PCMBCK]
V: 2V/div. H: 200nsec/div.



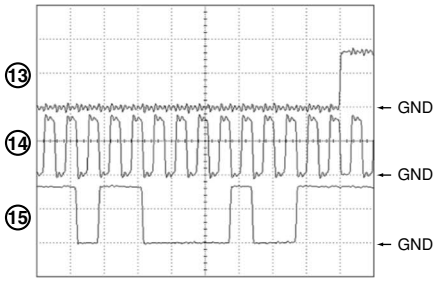
⑫ IC501-pin 3 [PCMLRCK]
V: 2V/div. H: 5µsec/div.



⑬ IC501-pin 3 [PCMLRCK]
V: 2V/div. H: 500nsec/div.

⑭ IC501-pin 1 [PCMBCK]
V: 2V/div. H: 500nsec/div.

⑮ IC501-pin 2 [PCMDATA]
V: 2V/div. H: 500sec/div.

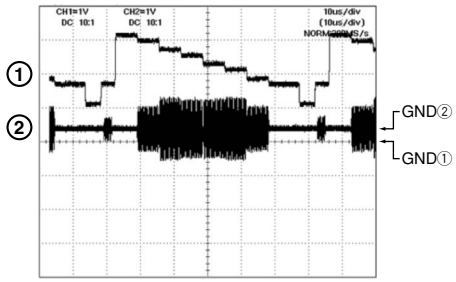


C JCKB ASSY

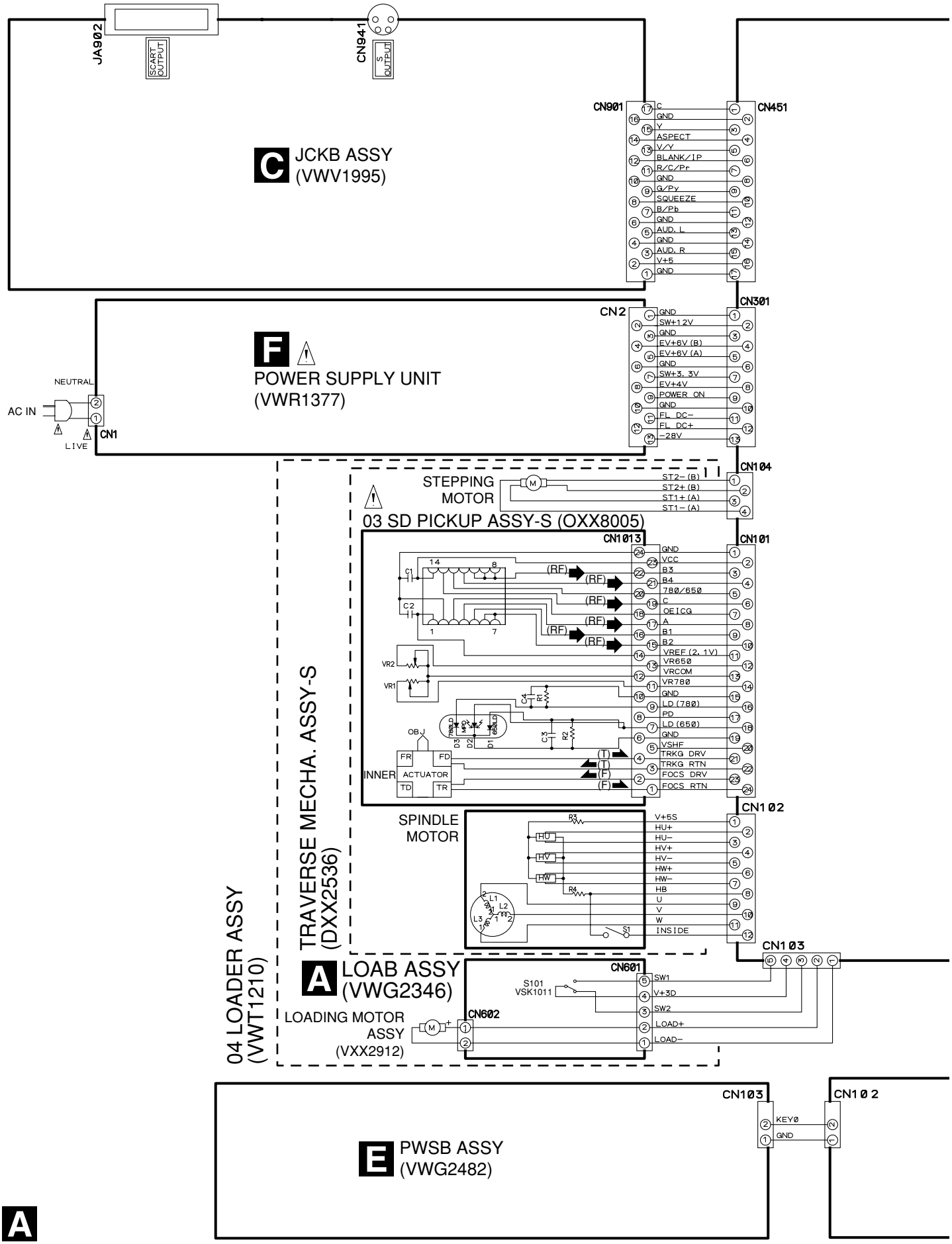
Measurement condition :
reference A1 (DVD), T2-chp 19, Color-bar

① CN941 [S Video Out-Y]
V: 1V/div. H: 10µsec/div.

② CN941 [S Video Out-C]
V: 1V/div. H: 10µsec/div.

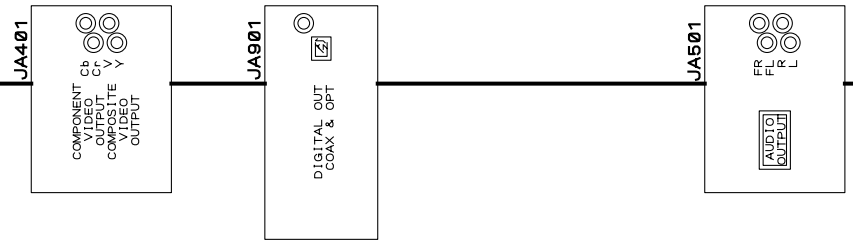


3.3 LOAB ASSY and OVERALL WIRING DIAGRAM



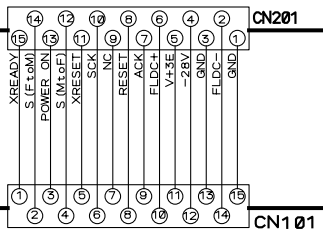
- When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- : The power supply is shown with the marked box.

(RF): RF SIGNAL ROUTE
(F): FOCUS SERVO LOOP LINE
(T): TRACKING SERVO LOOP LINE



B DVDM ASSY
(VWS1585)

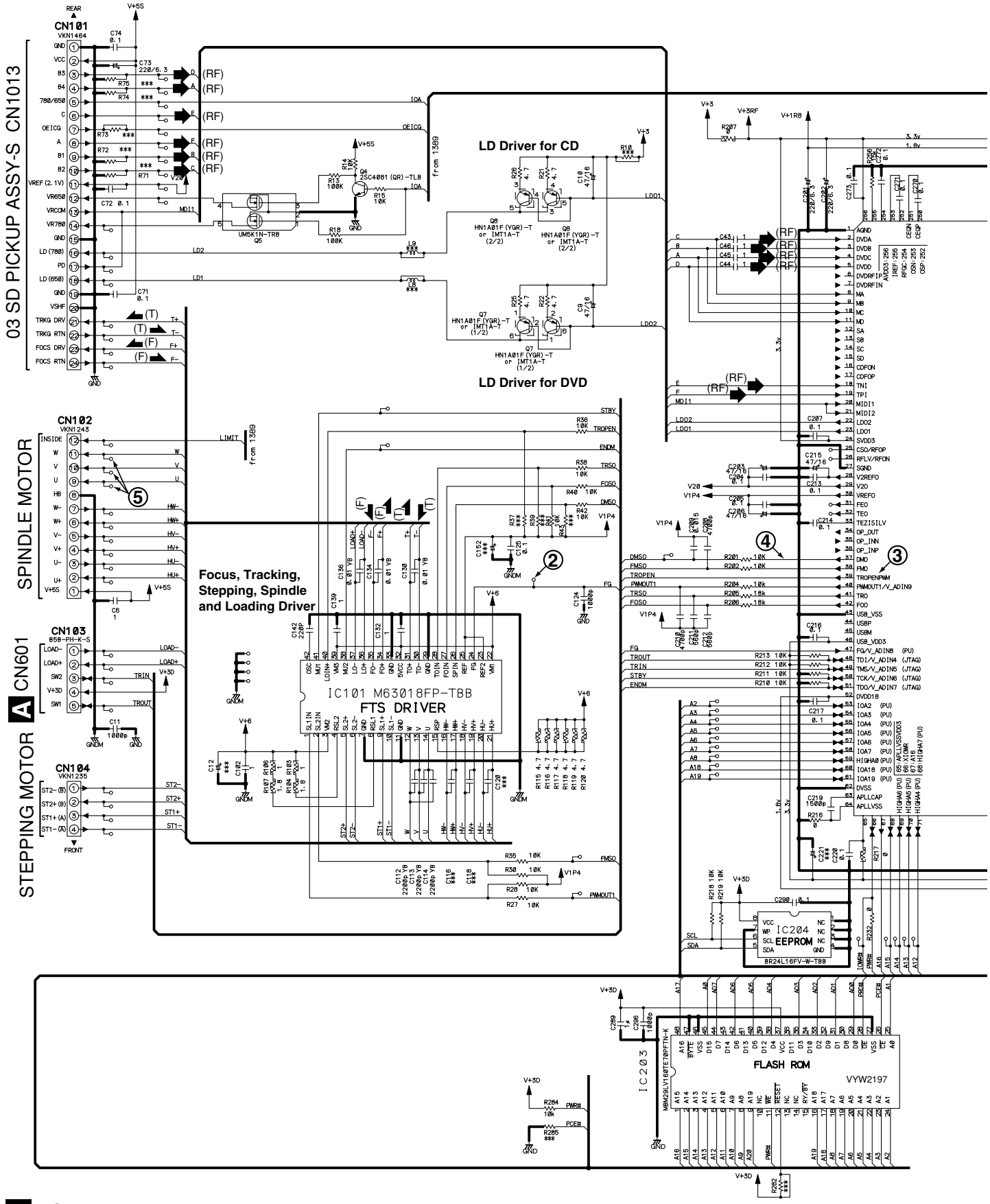
B 1/3 : DVD IC BLOCK
B 2/3 : POWER and VIDEO BLOCK
B 3/3 : AUDIO BLOCK



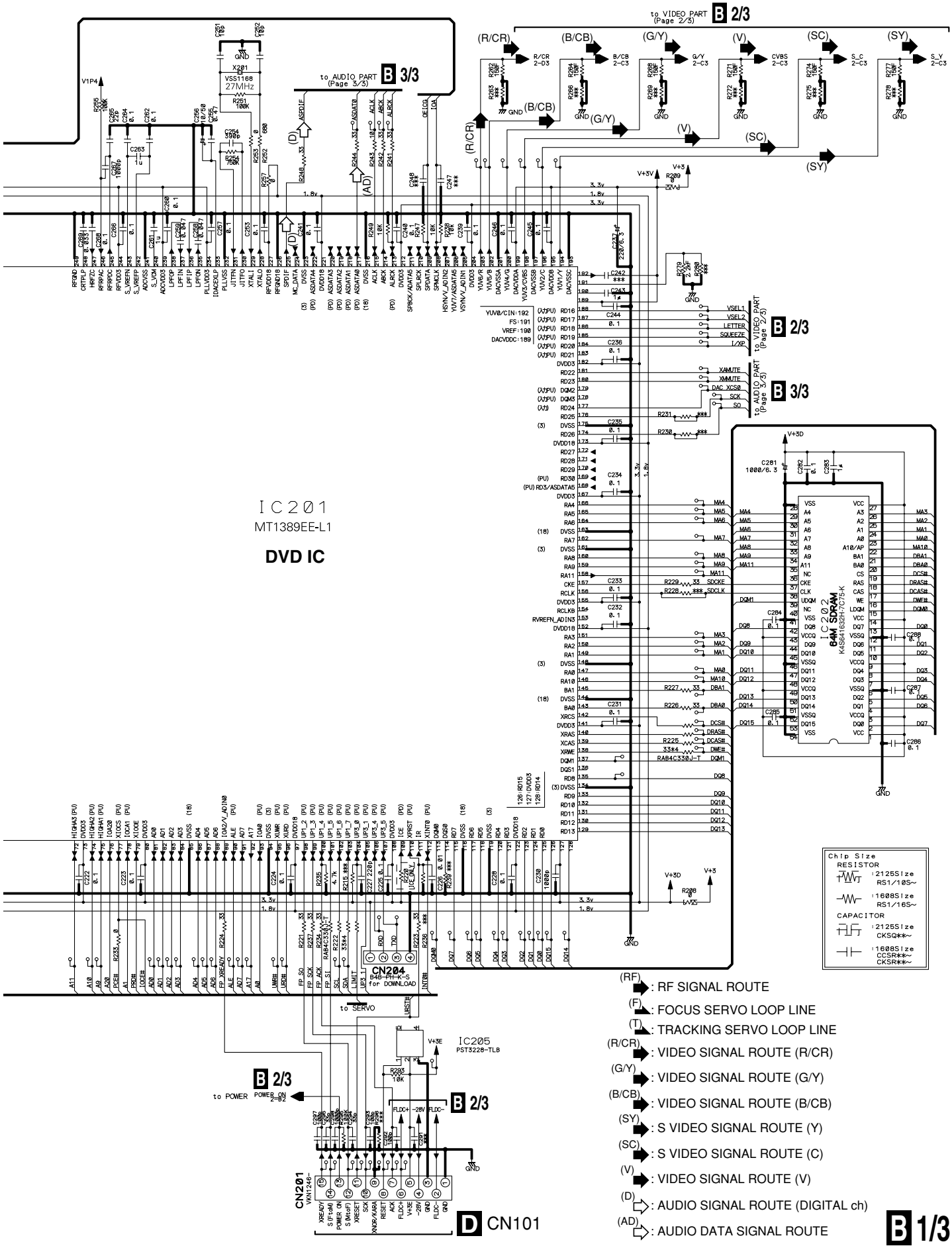
D FLKY ASSY
(VWG2511)

3.4 DVDM ASSY (1/3)

B 1/3 DVDM ASSY (VWS1585)

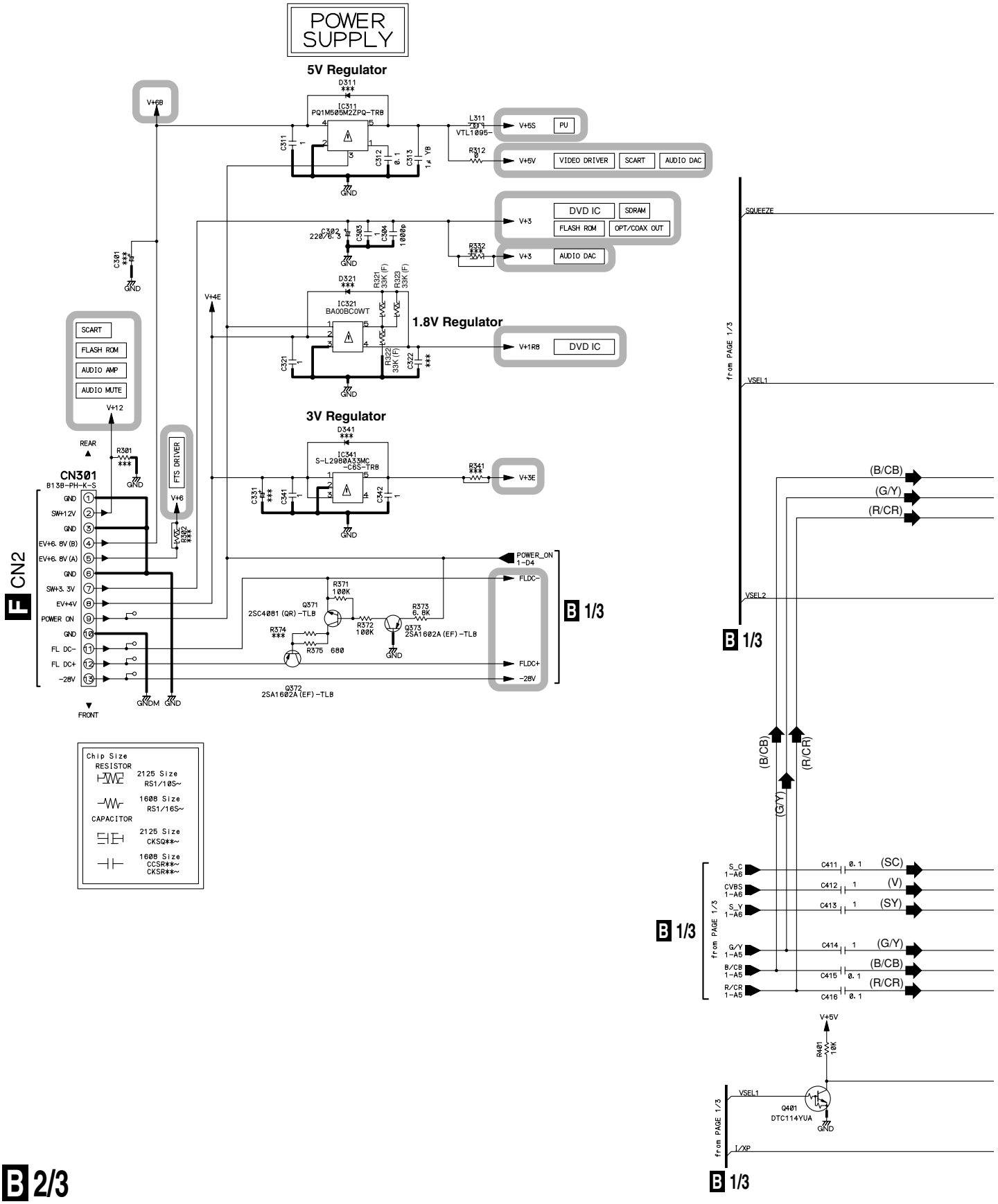


B 1/3


IC201
MT1389EE-L1
DVD IC
IC202
64M SDRAM
K4S641632H-TC75-K
IC205
PST3228-TLB
CN204
for DOWNLOAD
CN201
CN101
to VIDEO PART (Page 2/3) B 2/3
to AUDIO PART (Page 3/3) B 3/3
to SERVO
to POWER POWER ON 2-B2
B 2/3
D CN101
Chip Size
RESISTOR
:2125Size RS1/10S~
:1608Size RS1/16S~
CAPACITOR
:2125Size CKSQ**~
:1608Size CCSR**~
CKSR**~
(RF): RF SIGNAL ROUTE
(F): FOCUS SERVO LOOP LINE
(T): TRACKING SERVO LOOP LINE
(R/CR): VIDEO SIGNAL ROUTE (R/CR)
(G/Y): VIDEO SIGNAL ROUTE (G/Y)
(B/CB): VIDEO SIGNAL ROUTE (B/CB)
(SY): S VIDEO SIGNAL ROUTE (Y)
(SC): S VIDEO SIGNAL ROUTE (C)
(V): VIDEO SIGNAL ROUTE (V)
(D): AUDIO SIGNAL ROUTE (DIGITAL ch)
(AD): AUDIO DATA SIGNAL ROUTE
B 1/3

3.5 DVDM ASSY (2/3)

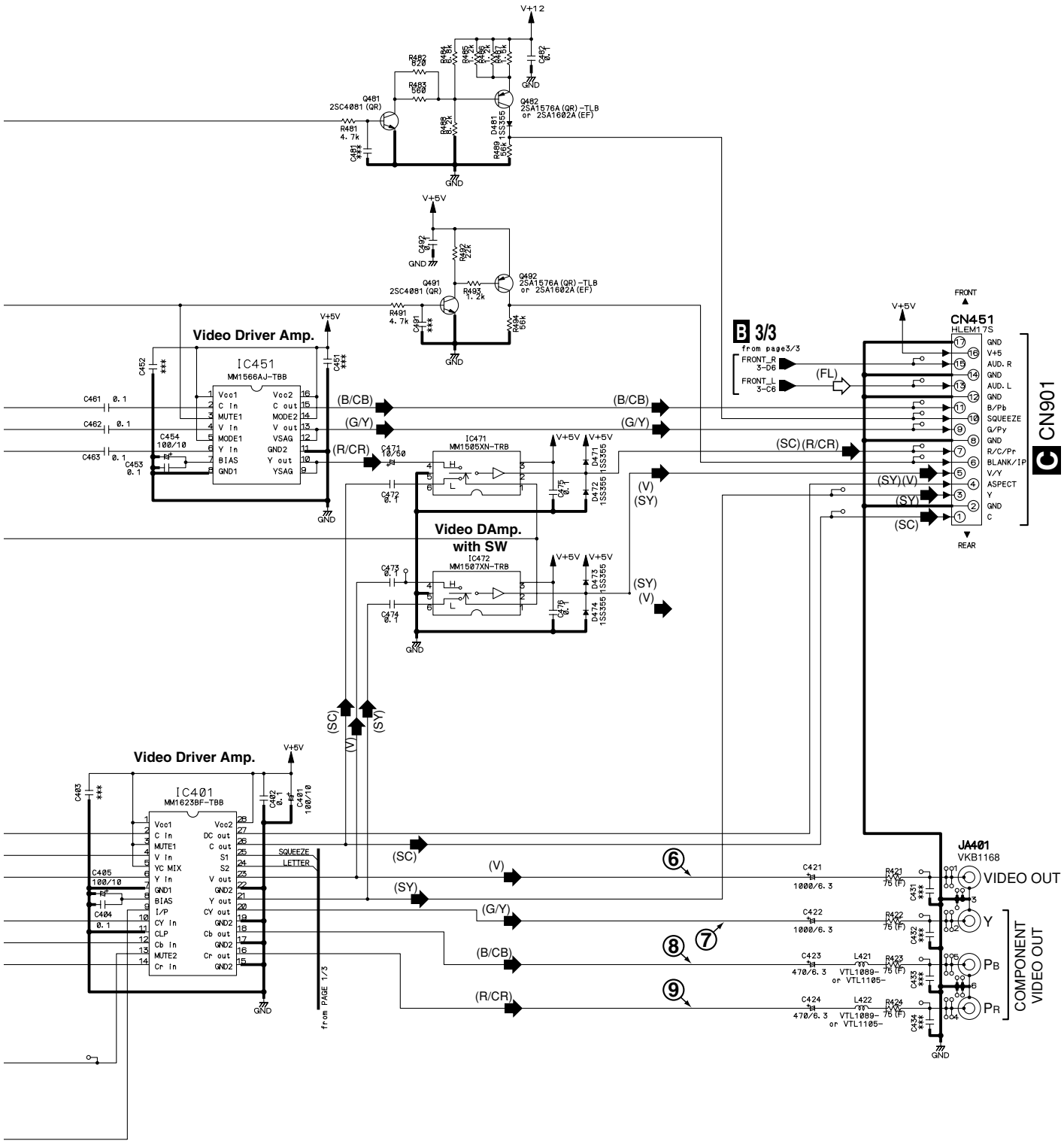
B 2/3 DVDM ASSY (VWS1585)



(R/CR) : VIDEO SIGNAL ROUTE (R/CR)
(G/Y) : VIDEO SIGNAL ROUTE (G/Y)
(B/CB) : VIDEO SIGNAL ROUTE (B/CB)
(SY) : S VIDEO SIGNAL ROUTE (Y)
(SC) : S VIDEO SIGNAL ROUTE (C)
(V) : VIDEO SIGNAL ROUTE (V)

(FL) : AUDIO SIGNAL ROUTE (Front L ch)

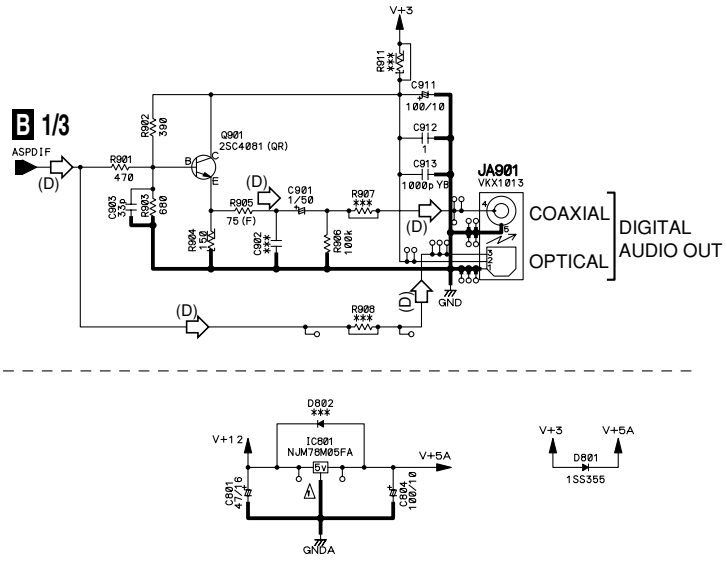
VIDEO

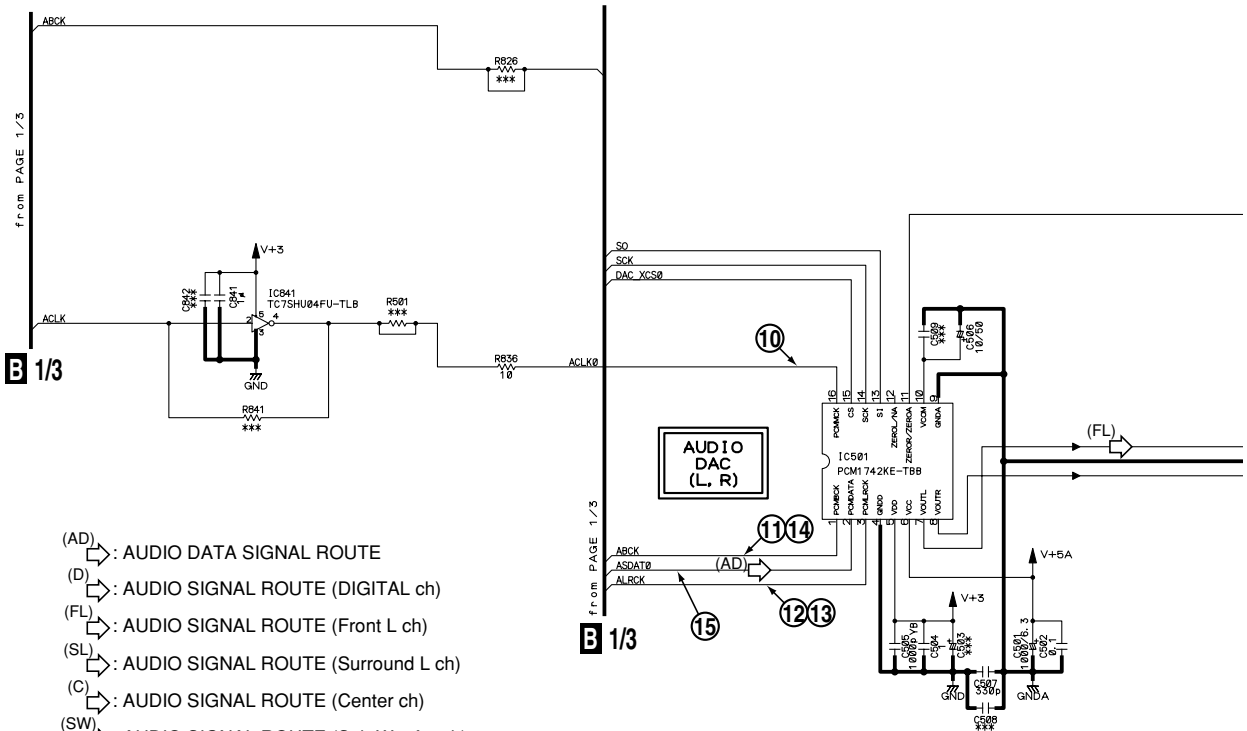


B 2/3

3.6 DVDM ASSY (3/3)

B 3/3 DVDM ASSY (VWS1585)





(AD) : AUDIO DATA SIGNAL ROUTE
(D) : AUDIO SIGNAL ROUTE (DIGITAL ch)
(FL) : AUDIO SIGNAL ROUTE (Front L ch)
(SL) : AUDIO SIGNAL ROUTE (Surround L ch)
(C) : AUDIO SIGNAL ROUTE (Center ch)
(SW) : AUDIO SIGNAL ROUTE (Sub Woofer ch)

B 3/3

A

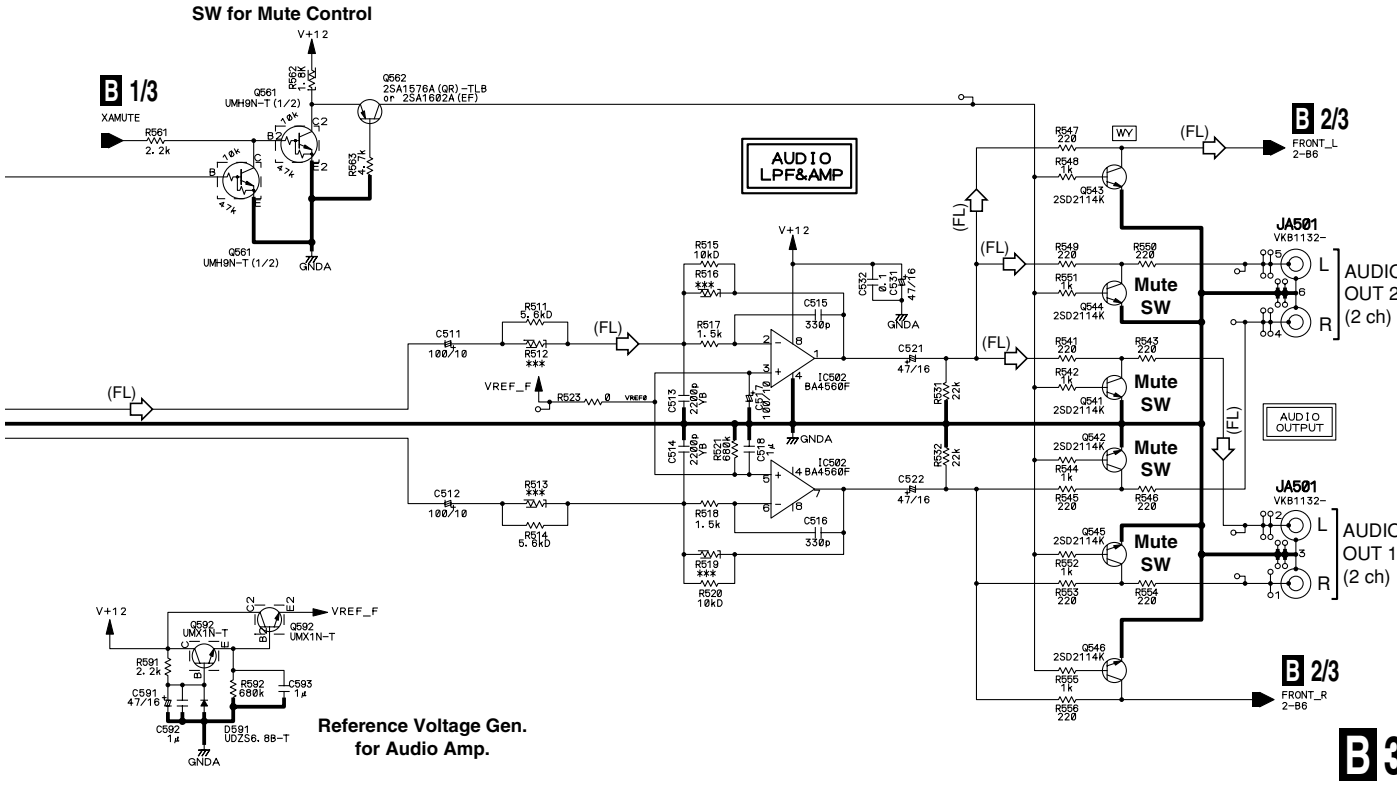
B

C

D

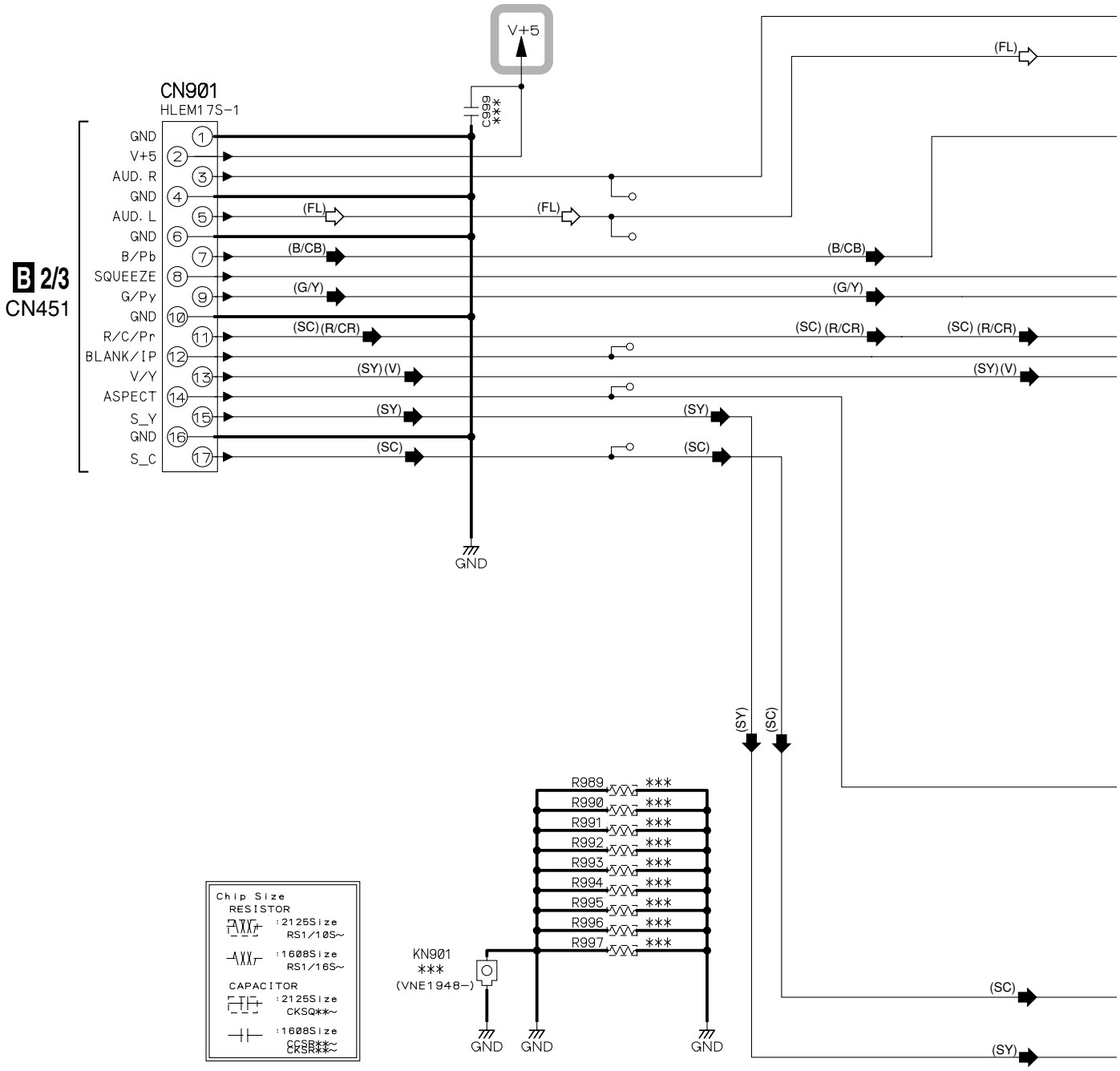
E

F


SW for Mute Control
B 1/3
XAMUTE
V+12
Q561
UMH9N-T (1/2)
Q562
2SA1576A (QR) -TLB
or 2SA1602A (EF)
GNDA
AUDIO
LPF&AMP
IC502
BA4560F
VREF_F
(FL)
Mute
SW
AUDIO
OUTPUT
JA501
VKB1132-
L
R
AUDIO
OUT 2
(2 ch)
AUDIO
OUT 1
(2 ch)
B 2/3
FRONT_L
2-B6
B 2/3
FRONT_R
2-B6
Q592
UMX1N-T
Reference Voltage Gen.
for Audio Amp.
B 3/3

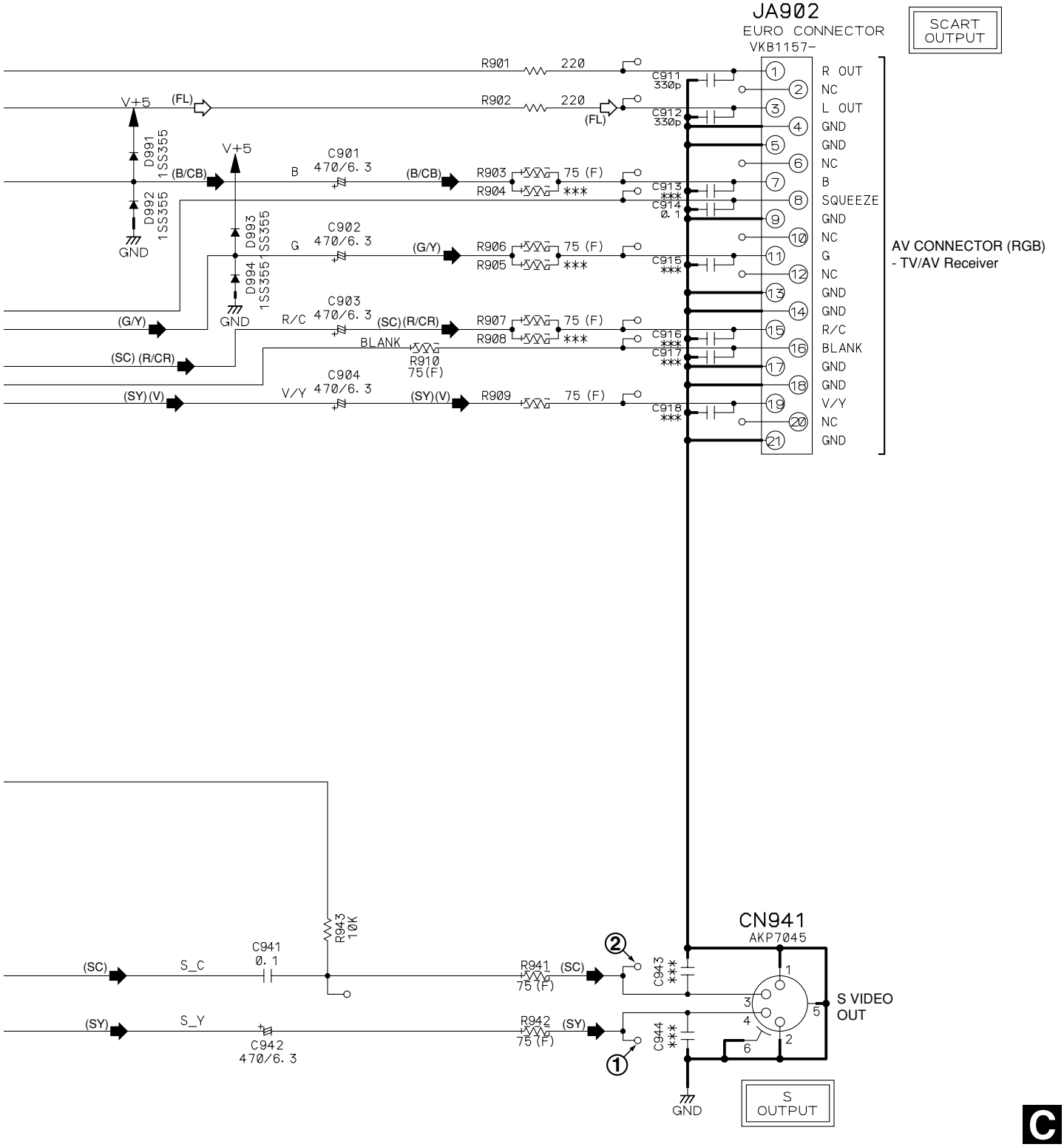
3.7 JCKB ASSY

C JCKB ASSY (VWV1995)



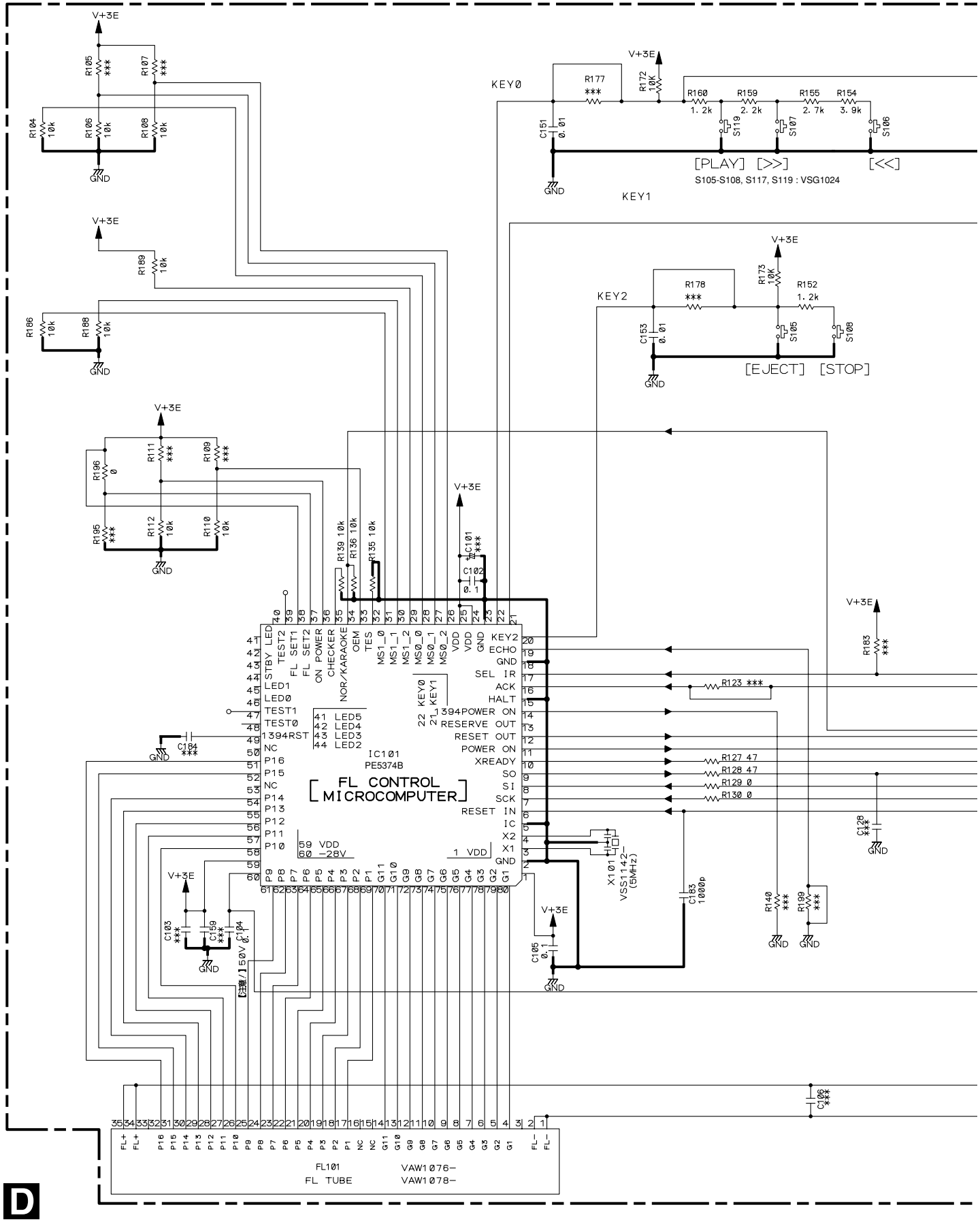
(R/CR) : VIDEO SIGNAL ROUTE (R/CR)
(G/Y) : VIDEO SIGNAL ROUTE (G/Y)
(B/CB) : VIDEO SIGNAL ROUTE (B/CB)
(SY) : S VIDEO SIGNAL ROUTE (Y)
(SC) : S VIDEO SIGNAL ROUTE (C)
(V) : VIDEO SIGNAL ROUTE (V)

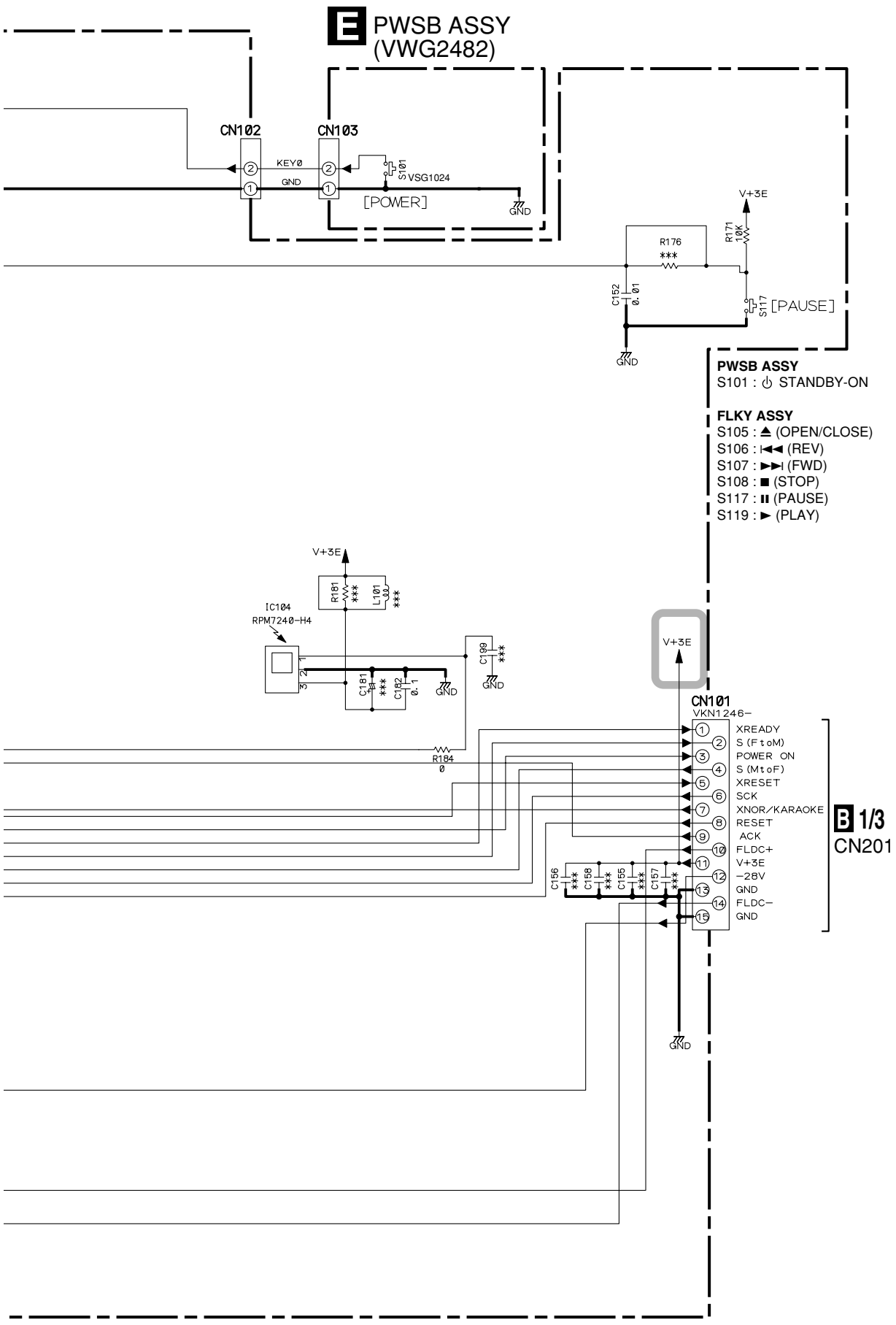
(FL) : AUDIO SIGNAL ROUTE (Front L ch)



3.8 FLKY and PWSB ASSYS

D FLKY ASSY (VWG2511)




E PWSB ASSY
(VWG2482)
CN102
CN103
KEY0
GND
S101
VSG1024
[POWER]
GND
V+3E
R171
10K
R176
***
C152
0.01
S117
[PAUSE]
GND
PWSB ASSY
S101 : ⏻ STANDBY-ON
FLKY ASSY
S105 : ⏏ (OPEN/CLOSE)
S106 : ⏮ (REV)
S107 : ⏭ (FWD)
S108 : ■ (STOP)
S117 : ❚❚ (PAUSE)
S119 : ▶ (PLAY)
V+3E
R181
***
L101
0
***
IC104
RPM7240-H4
C181
***
C182
0.1
C189
***
GND
GND
V+3E
CN101
VKN1246-
1 XREADY
2 S (FtoM)
3 POWER ON
4 S (MtoF)
5 XRESET
6 SCK
7 XNOR/KARAOKE
8 RESET
9 ACK
10 FLDC+
11 V+3E
12 -28V
13 GND
14 FLDC-
15 GND
R184
0
C156
***
C158
***
C155
***
C157
***
GND
B 1/3
CN201

3.9 POWER SUPPLY UNIT

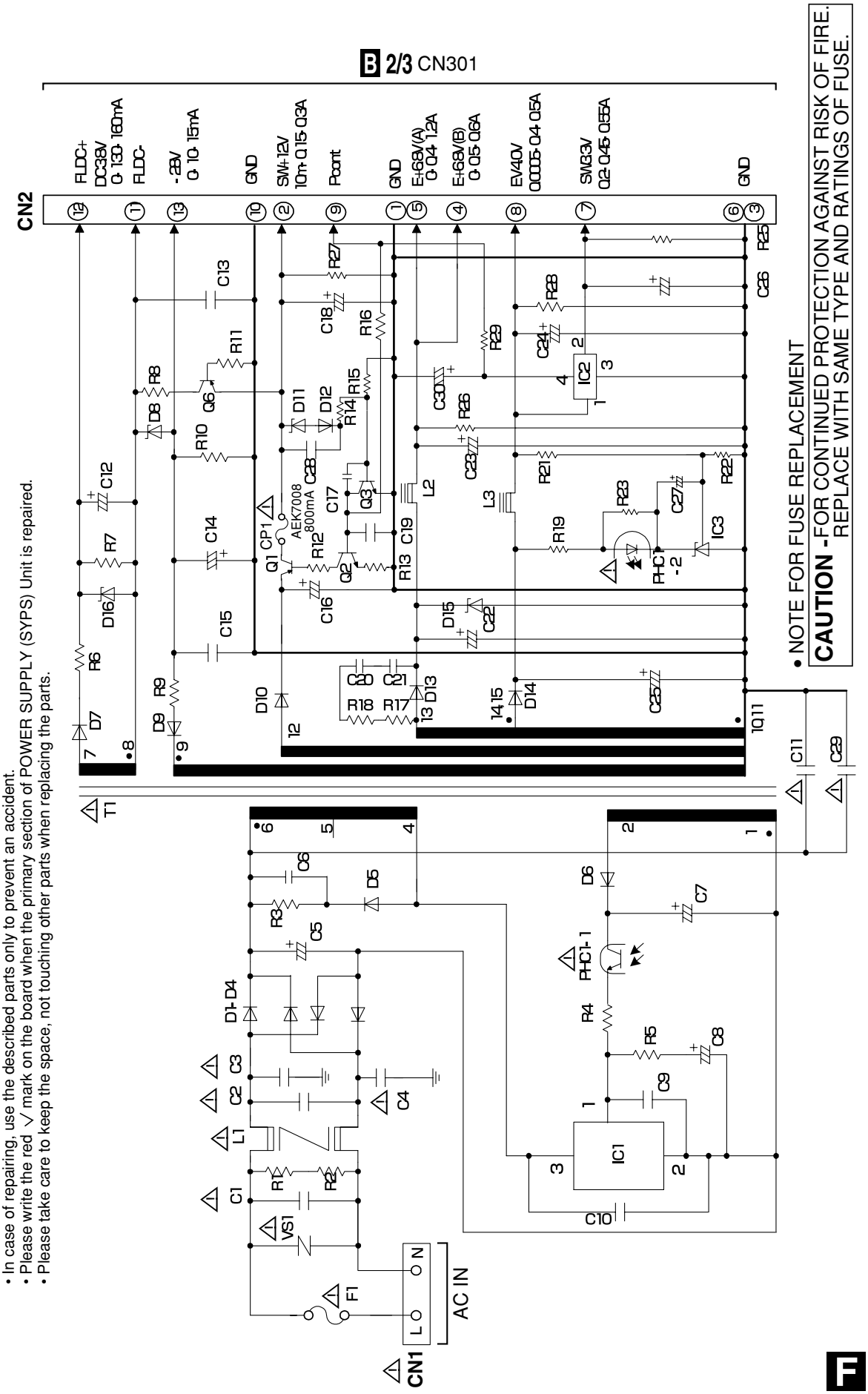
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE.
REPLACE ONLY WITH SAME TYPE NO. 491.800 MFD, BY
LITTELFUSE INC. FOR CP1 (AEK7008).

F POWER SUPPLY UNIT
(VWR1377)

⚠

« **NOTE OF SPARE PARTS IN POWER SUPPLY (SYPS) UNIT** »

- In case of repairing, use the described parts only to prevent an accident.
- Please write the red √ mark on the board when the primary section of POWER SUPPLY (SYPS) Unit is repaired.
- Please take care to keep the space, not touching other parts when replacing the parts.



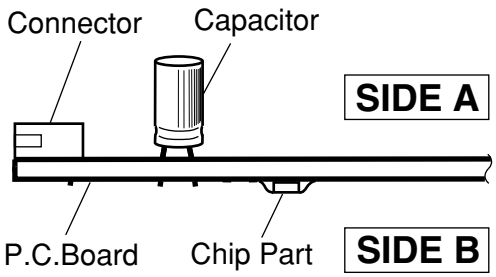
4. PCB CONNECTION DIAGRAM
4.1 LOAB ASSY

NOTE FOR PCB DIAGRAMS :

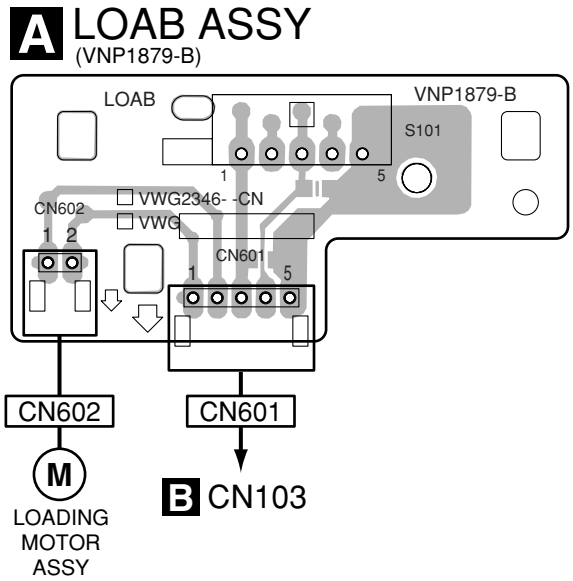
1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

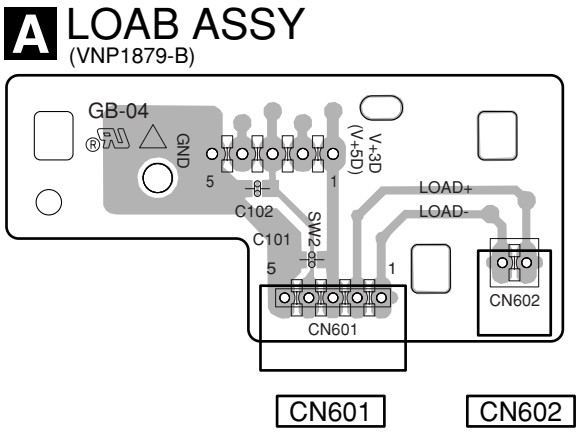
3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



SIDE A

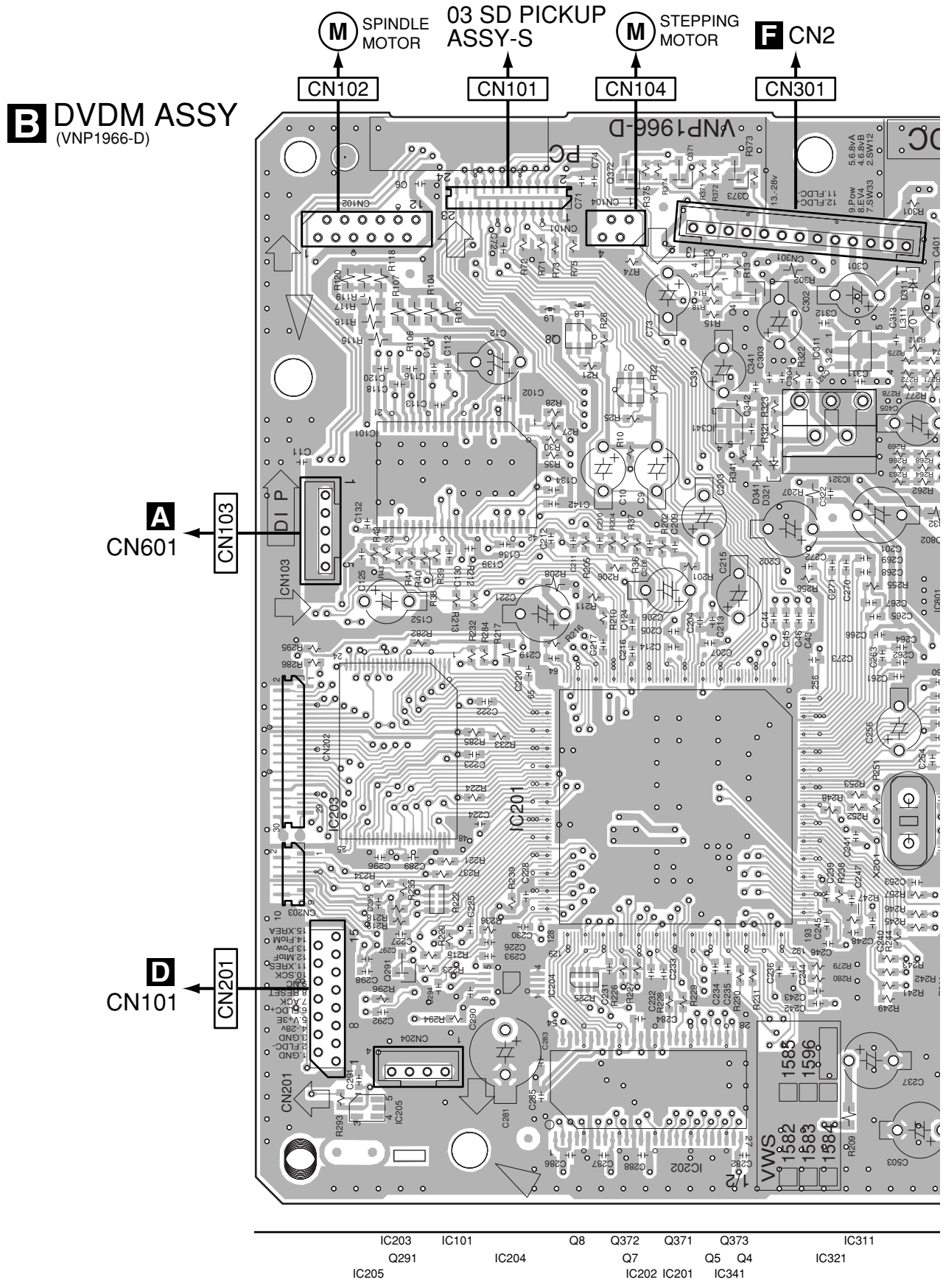


SIDE B



4.2 DVDM ASSY

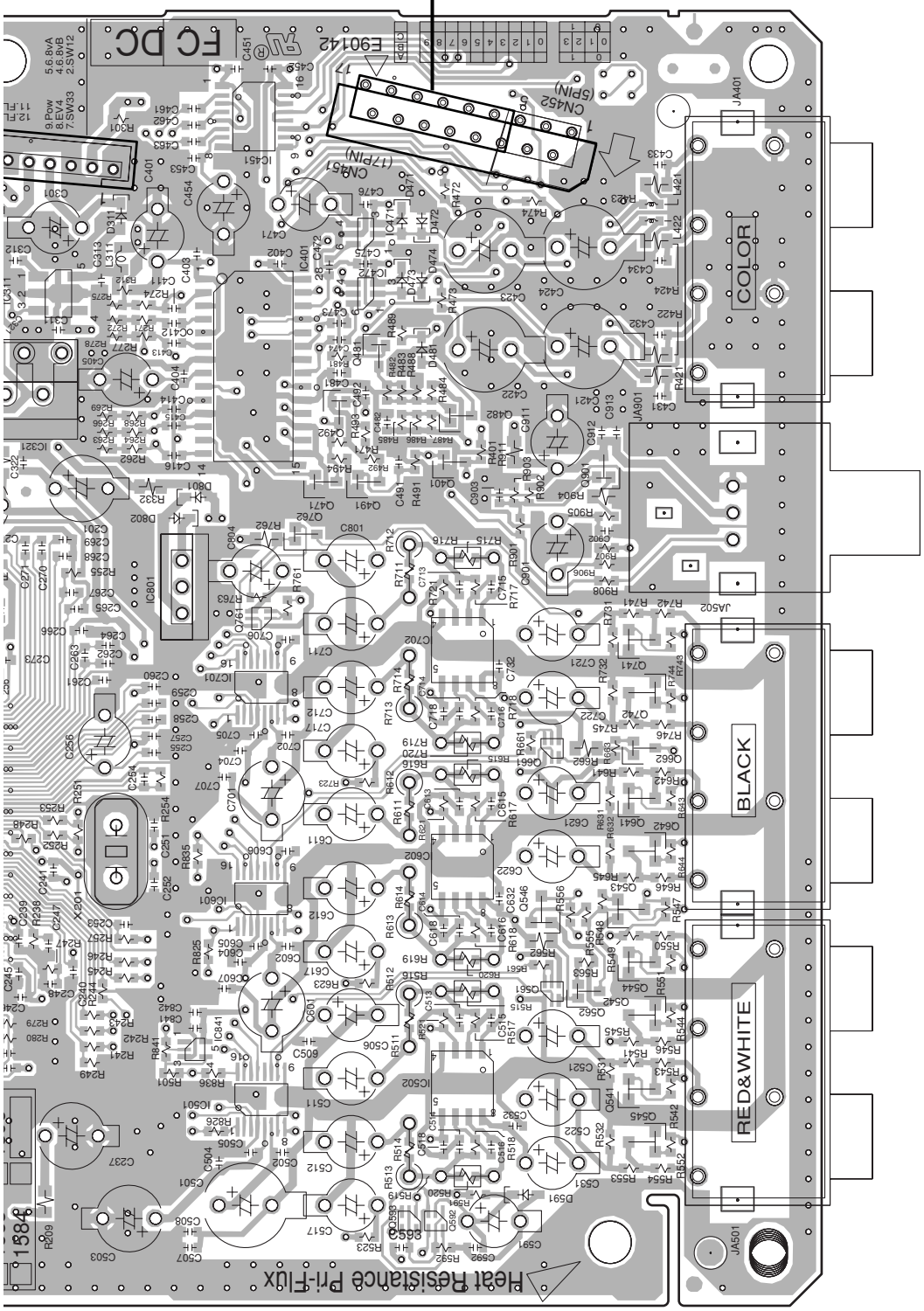
SIDE A



SIDE A

C CN901

CN451



IC311
IC321
IC801
IC841
IC451
IC401
Q761
IC701
IC601
IC501
Q762
IC471
IC472
Q481
Q492
Q471
Q491
Q593
IC702
IC602
IC502
Q592
Q482
Q401
Q661
Q546
Q561
Q562
Q901
Q741
Q742
Q662
Q641
Q642
Q541-Q545

SIDE B

A

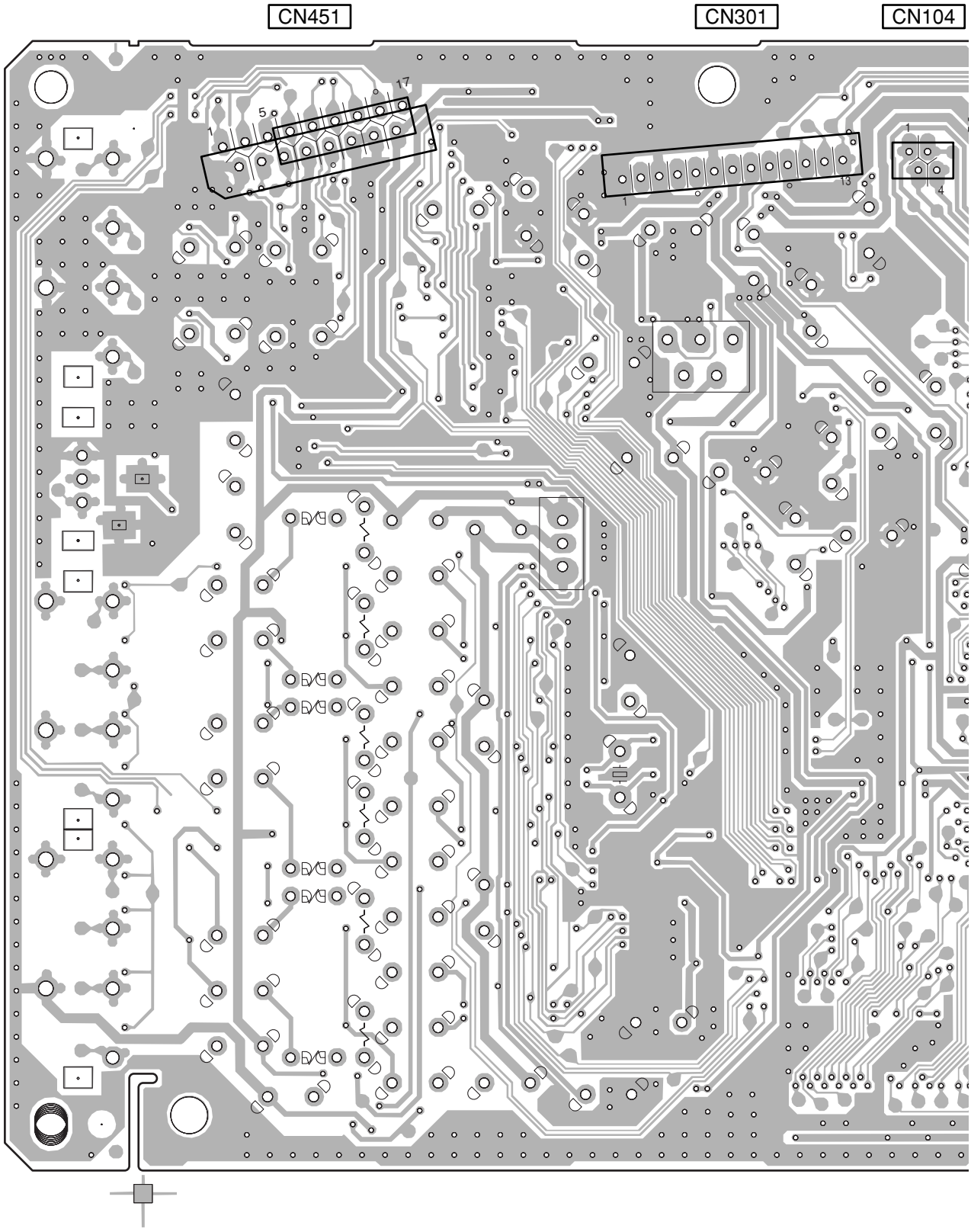
B

C

D

E

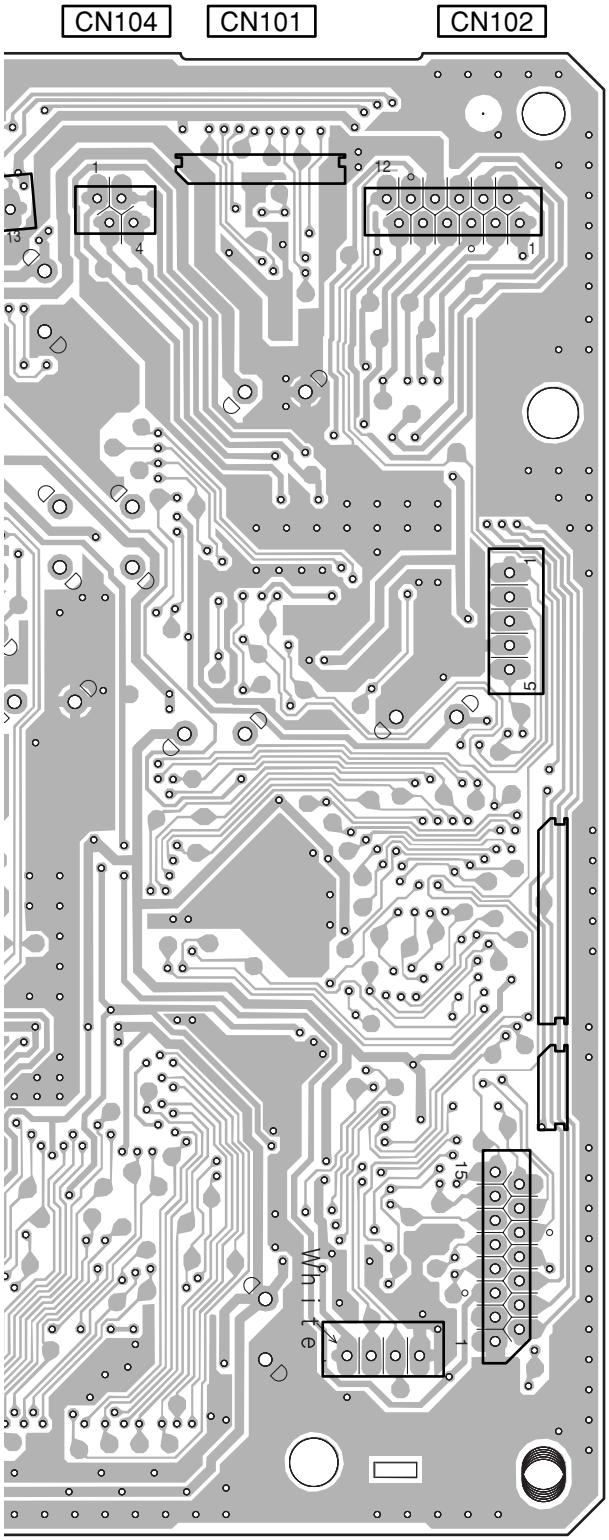
F



B

SIDE B

B DVDM ASSY
(VNP1966-D)

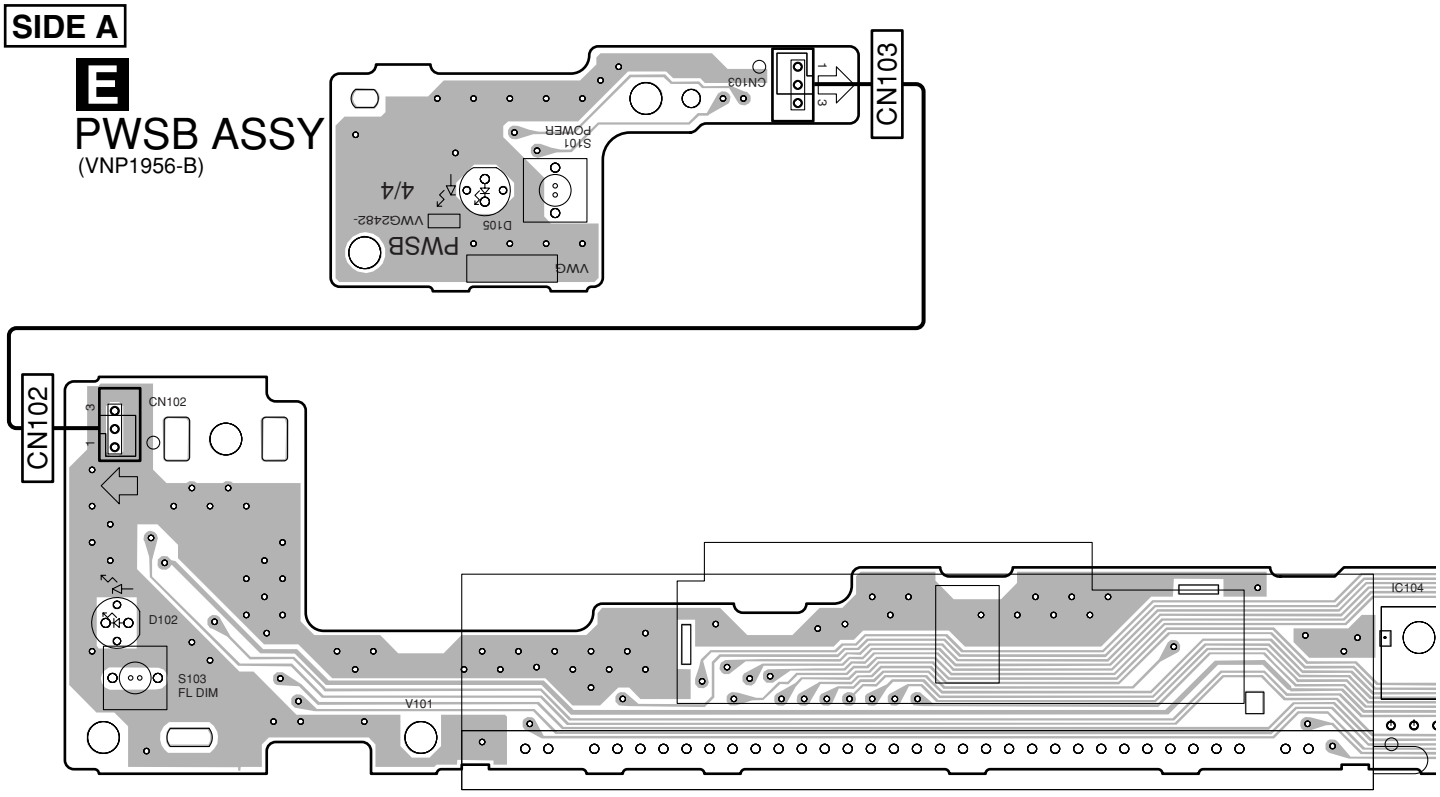


4.3 FLKY and PWSB ASSYS

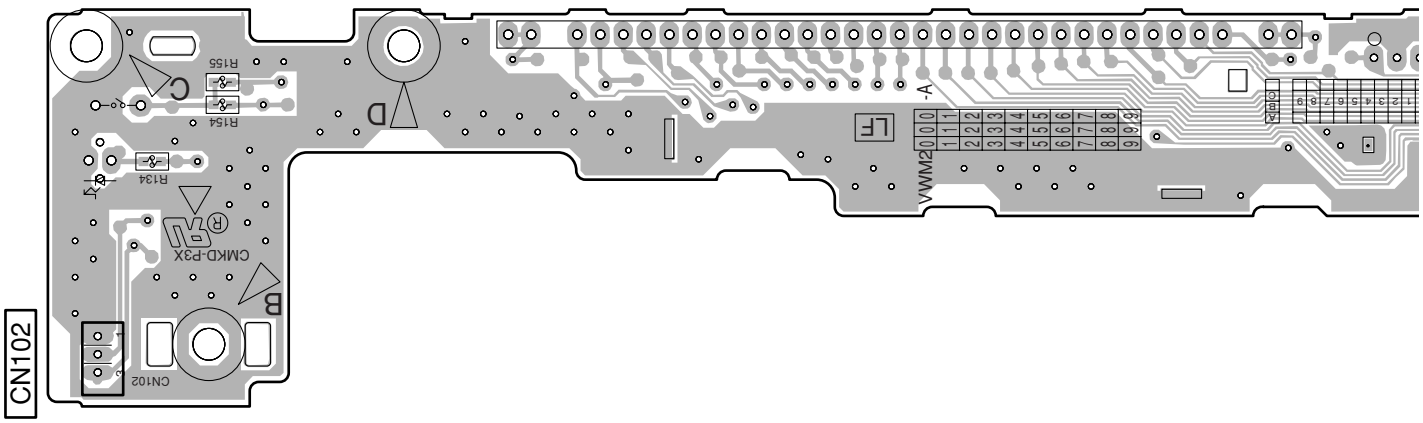
SIDE A

E

PWSB ASSY
(VNP1956-B)

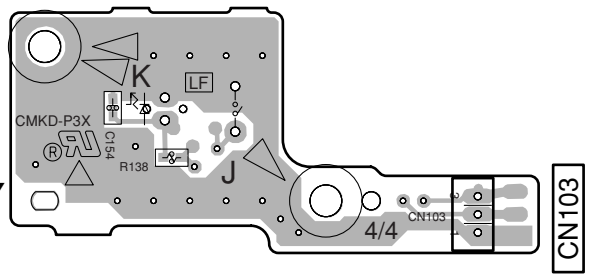


SIDE B



E

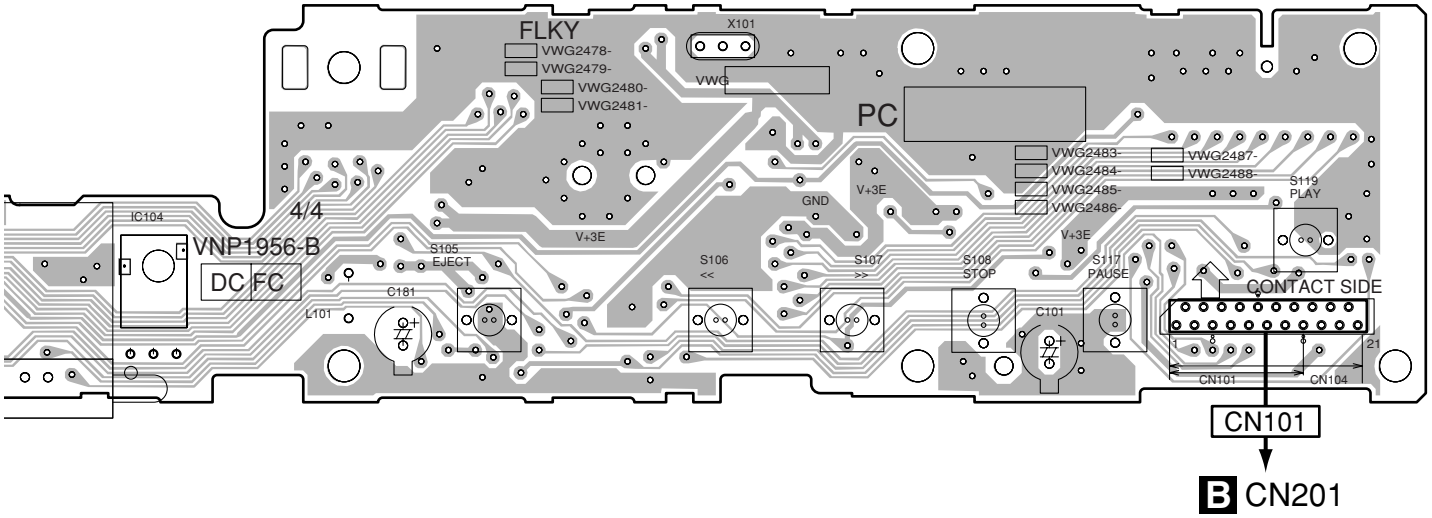
PWSB ASSY
(VNP1956-B)



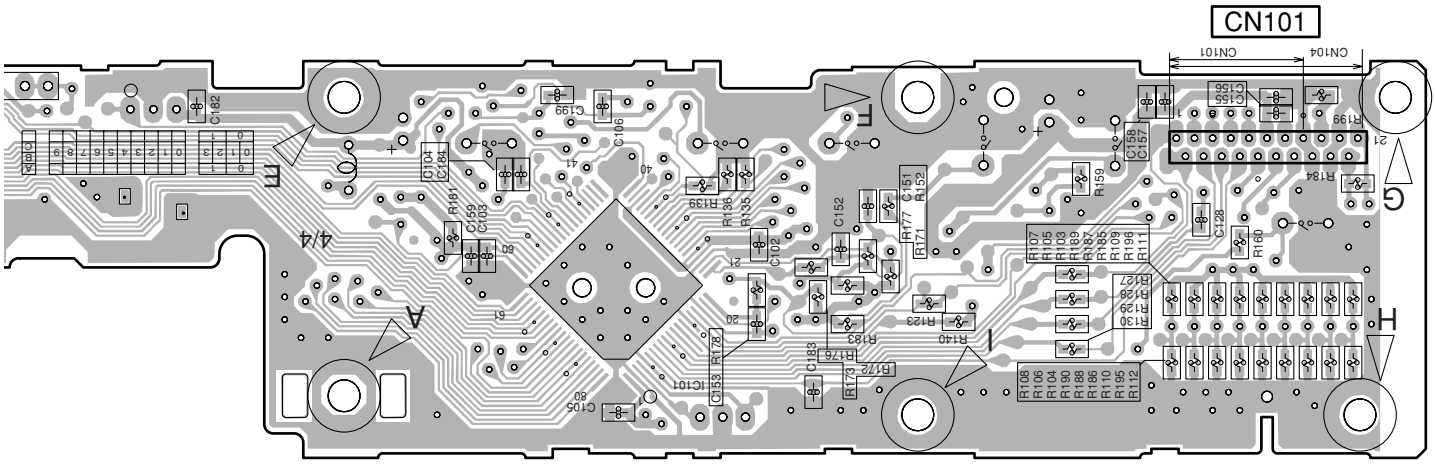
D E

SIDE A

D FLKY ASSY
(VNP1956-B)



SIDE B



D FLKY ASSY
(VNP1956-B)

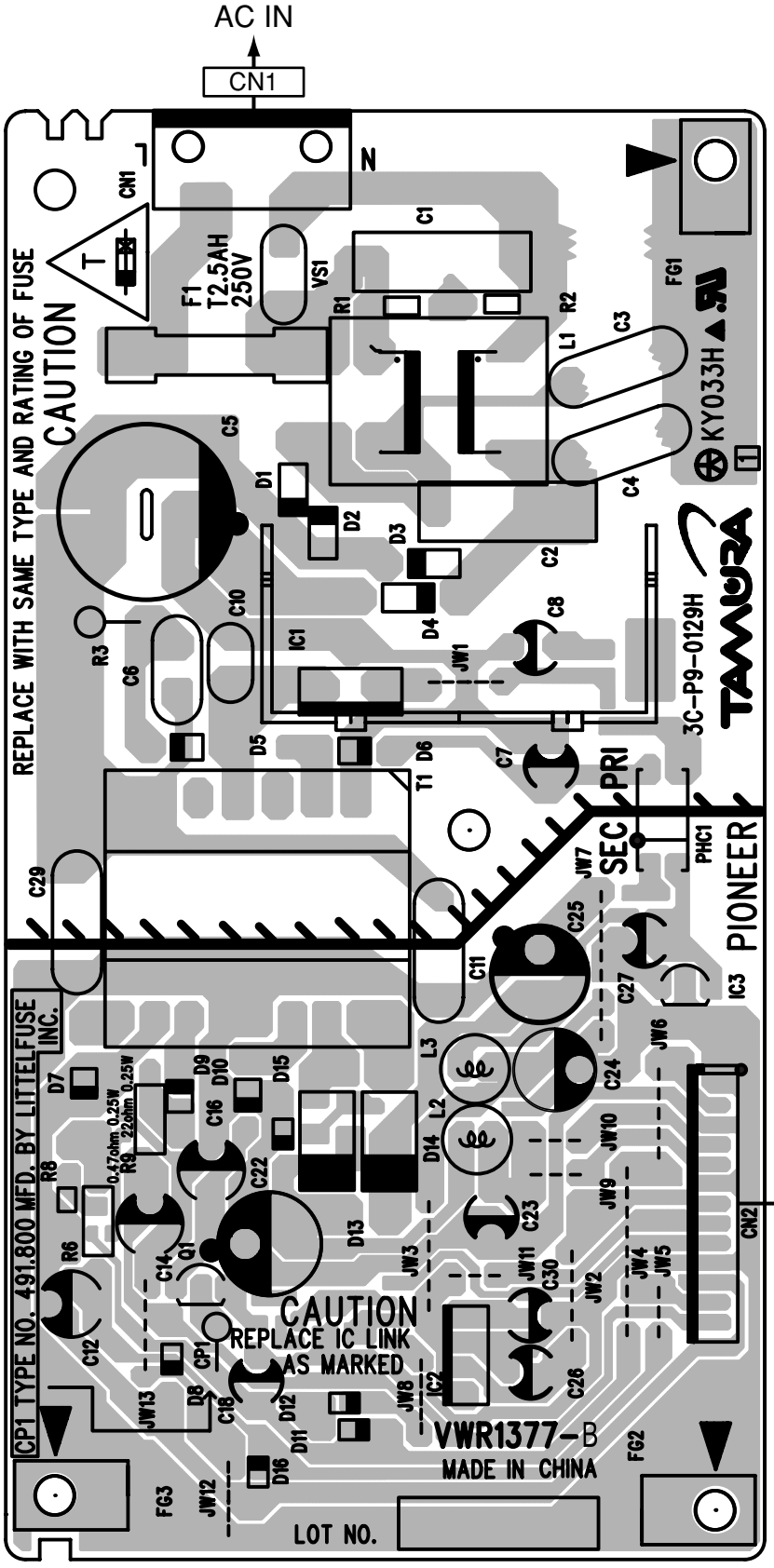
4.4 POWER SUPPLY UNIT

SIDE A **SIDE A**

A B C D E F

IC1 IC3 CP1 IC2

F POWER SUPPLY UNIT

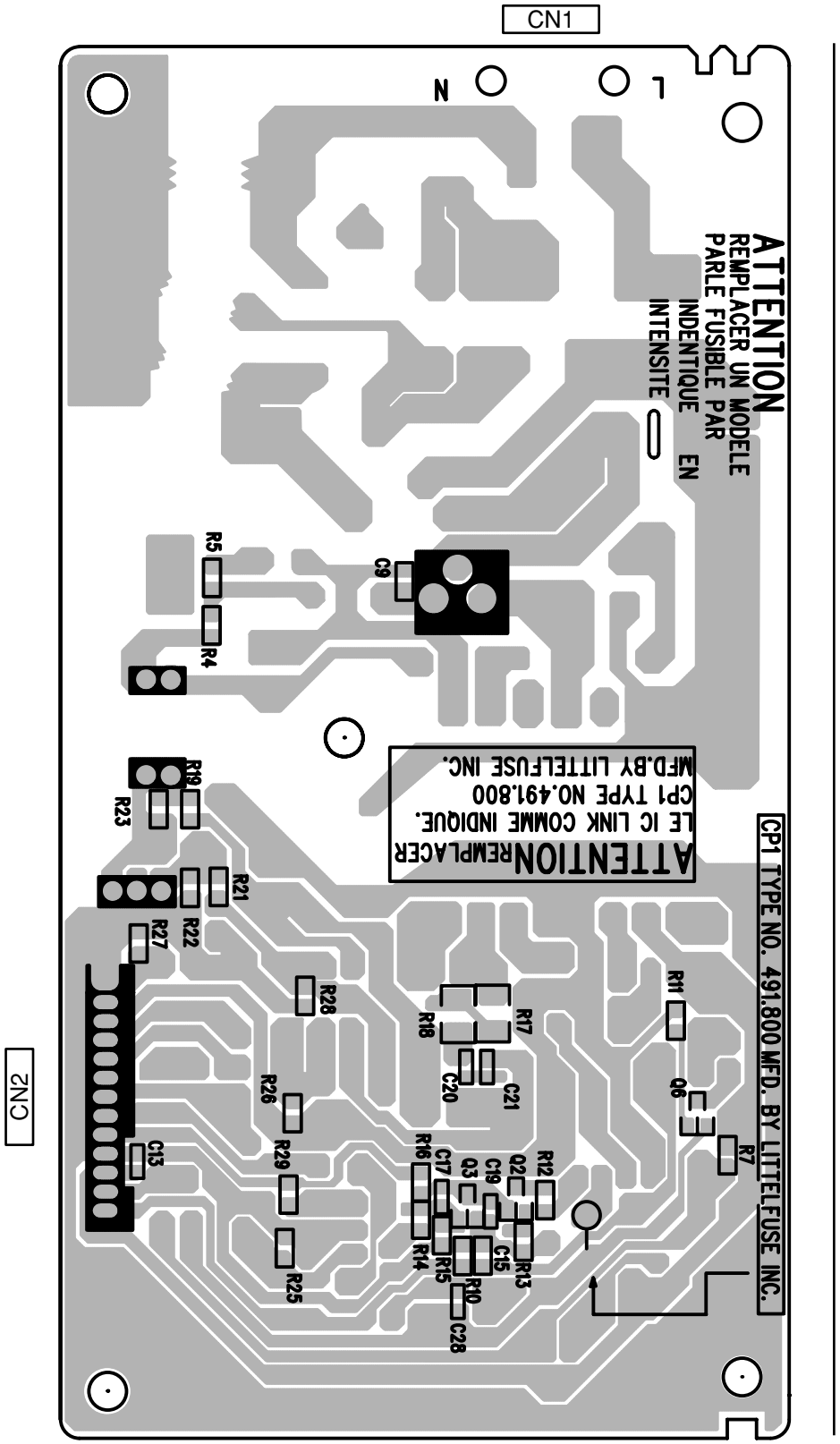


F **F**

SIDE B

SIDE B

F POWER SUPPLY UNIT



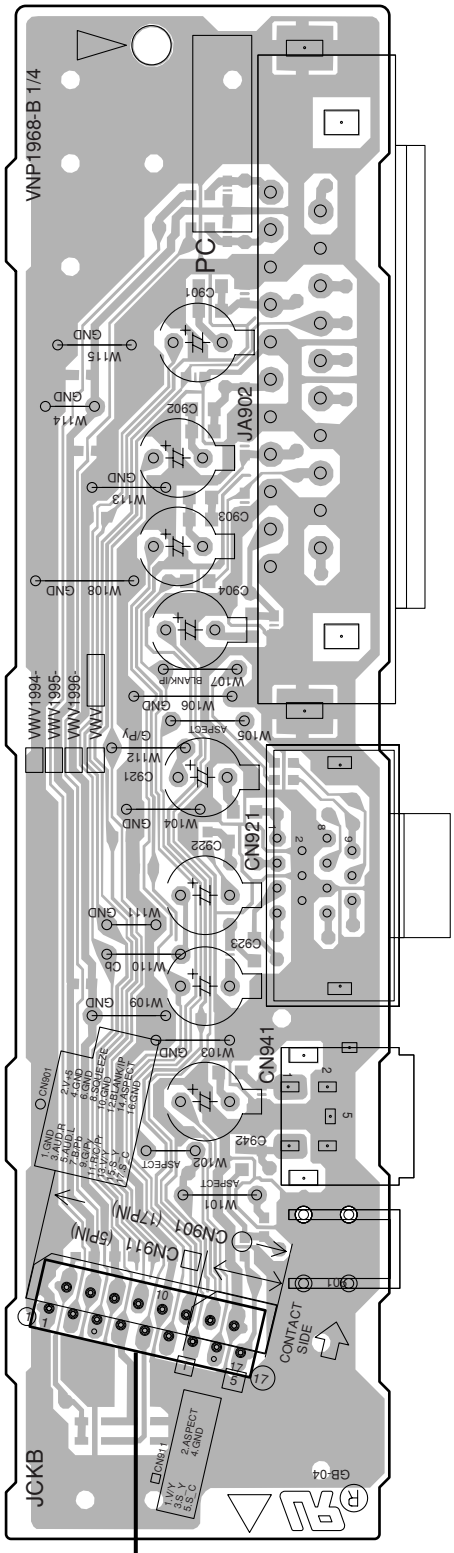
F

F

4.5 JCKB ASSY

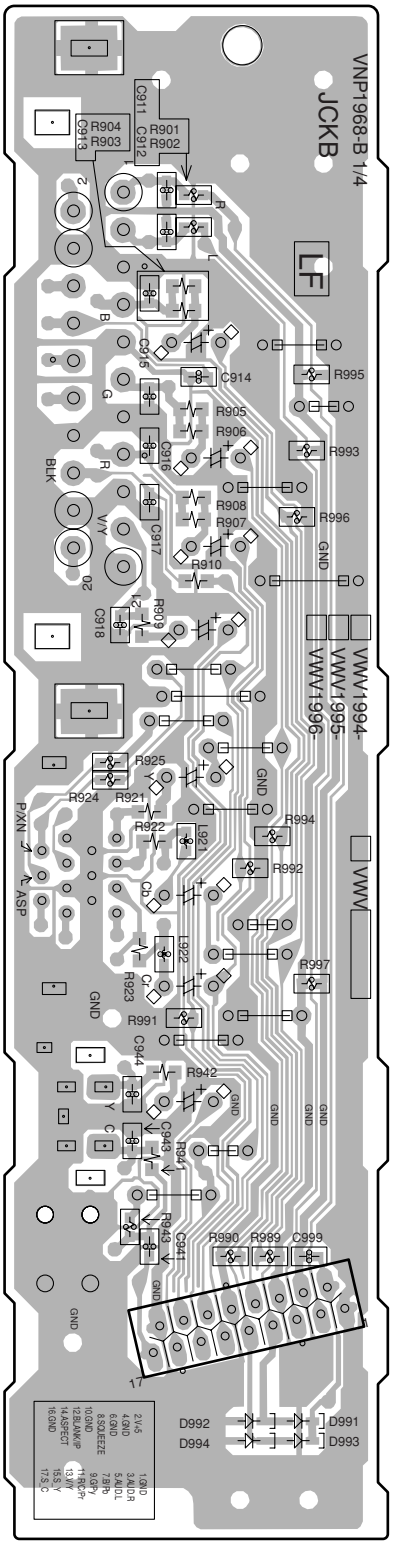
SIDE A

C JCKB ASSY
(VNP1968-B)



SIDE B

C JCKB ASSY
(VNP1968-B)



5. PCB PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω → 56 x 10^1 → 561 ..... RD1/4PU 5 6 1 J
47k Ω → 47 x 10^3 → 473 ..... RD1/4PU 4 7 3 J
0.5 Ω → R50 ..... RN2H R 5 0 K
1 Ω → 1R0 ..... RS1P 1 R 0 K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562 x 10^1 → 5621 ..... RN1/4PC 5 6 2 1 F

Mark	No.	Description	Part No.
LIST OF ASSEMBLIES			
NSP	1..04	LOADER ASSY	VWT1210
NSP	2..	LOAB ASSY	VWG2346
	1..	DVDM ASSY	VWS1585
	1..	JCKB ASSY	VWV1995
NSP	1..	FLKB ASSY	VWM2281
	2..	FLKY ASSY	VWG2511
	2..	PWSB ASSY	VWG2482
⚠	1..	POWER SUPPLY UNIT	VWR1377

Mark	No.	Description	Part No.
A LOAB ASSY [VWG2346]			
SWITCHES AND RELAYS			
	S101		VSK1011
OTHERS			
	CN602	KR CONNECTOR	S2B-PH-K
	CN601	KR CONNECTOR	S5B-PH-K
		PC BOARD LOAB	VNP1879

Mark	No.	Description	Part No.
B DVDM ASSY [VWS1585]			
SEMICONDUCTORS			
⚠	IC321		BA00BC0WT
	IC502		BA4560F
	IC204		BR24L16FV-W
	IC202		K4S641632H-TC75
	IC101		M63018FP
	IC471		MM1505XN
	IC472		MM1507XN
	IC451		MM1566AJ
	IC401		MM1623BF
	IC201		MT1389EE-L1
⚠	IC801		NJM78M05FA
	IC501		PCM1742KE
⚠	IC311		PQ1M505M2SPQ
	IC205		PST3228
⚠	IC341		S-L2980A33MC-C6S
	IC841		TC7SHU04FU
	IC203		VYW2197
	Q482, Q492, Q562		2SA1576A
	Q372, Q373		2SA1602A
	Q371, Q4, Q481, Q491, Q901		2SC4081
	Q541–Q546		2SD2114K
	Q401		DTC114YUA
	Q7, Q8		HN1A01F
	Q592		HN1C01FU
	Q5		UM5K1N
	Q561		UMH9N
	D471–D474, D481, D801		1SS355
	D591		UDZS6R8(B)
COILS AND FILTERS			
	L421, L422	CHIP BEADS	VTL1089
	L311	CHIP BEADS	VTL1095
CAPACITORS			
	C292, C293, C297		CCSRCH101J50
	C265		CCSRCH220J50
	C142, C227		CCSRCH221J50
	C294, C295, C903		CCSRCH330J50
	C507, C515, C516		CCSRCH331J50
	C254		CCSRCH391J50
	C211, C212		CCSRCH561J50
	C251		CCSRCH8R0D50
	C252		CCSRCH9R0D50
	C256, C471, C506		CEAT100M50
	C401, C405, C454, C511, C512		CEAT101M10
	C517, C804, C911		CEAT101M10
	C281, C421, C422, C501		CEAT102M6R3
	C901		CEAT1R0M50
	C201, C202, C237, C302, C73		CEAT221M6R3
	C10, C203, C206, C215		CEAT470M16
	C521, C522, C531, C591, C801		CEAT470M16
	C9		CEAT470M16
	C423, C424		CEAT471M6R3
	C11, C124, C230, C267, C296		CKSRYB102K50
	C298, C304, C505, C913		CKSRYB102K50
	C130, C134, C136, C226		CKSRYB103K50
	C313		CKSRYB105K10
	C219		CKSRYB152K50
	C209		CKSRYB153K25
	C112–C114, C513, C514		CKSRYB222K50
	C269		CKSRYB333K16
	C208, C210		CKSRYB472K50
	C258, C259		CKSRYB473K50
	C255		CKSRYB474K10

Mark	No.	Description	Part No.
	C125, C204, C205, C207		CKSRYF104Z25
	C213, C214, C216, C217, C220		CKSRYF104Z25
A	C222–C225, C228, C231–C236		CKSRYF104Z25
	C239–C241, C244–C246, C253		CKSRYF104Z25
	C257, C260, C262, C264, C266		CKSRYF104Z25
	C268, C270–C273, C282		CKSRYF104Z25
	C284–C288, C290, C312, C402		CKSRYF104Z25
	C404, C411, C415, C416, C453		CKSRYF104Z25
	C461–C463, C472–C476, C482		CKSRYF104Z25
	C492, C502, C532, C71, C72		CKSRYF104Z25
	C74		CKSRYF104Z25
	C102, C132, C139, C243, C261		CKSRYF105Z10
	C263, C283, C289, C303, C311		CKSRYF105Z10
B	C321, C341, C342, C412–C414		CKSRYF105Z10
	C43–C46, C504, C518		CKSRYF105Z10
	C592, C593, C6, C841, C912		CKSRYF105Z10
	RESISTORS		
	R222, R225		RAB4C330J
	R515, R520		RN1/16SE1002D
	R511, R514		RN1/16SE5601D
	R207–R209, R217		RS1/10S0R0J
	R904		RS1/10S151J
	R562		RS1/10S182J
C	R103, R106		RS1/10S1R0J
	R104, R107		RS1/10S1R8J
	R115–R120		RS1/10S4R7J
	R421–R424		RS1/10S75R0F
	R262, R264, R268, R271, R274		RS1/16S1500F
	R277		RS1/16S1500F
	R279		RS1/16S2201F
	R321–R323		RS1/16S3302F
	R905		RS1/16S75R0F
	Other Resistors		RS1/16S###J
D	**OTHERS**		
	CN301	CONNECTOR	B13B-PH-K
	CN103	CONNECTOR POST	B5B-PH-K
	CN451	CONNECTOR POST	HLEM17S-1
	JA501	JACK	VKB1132
	JA401	JACK	VKB1168
	CN104	4P CONNECTOR	VKN1235
	CN102	12P CONNECTOR	VKN1243
	CN201	15P CONNECTOR	VKN1246
	CN101	24P CONNECTOR	VKN1464
	JA901	JACK	VKX1013
E	X201	(27MHz)	VSS1168

C JCKB ASSY [VWV1995]

SEMICONDUCTORS

D991–D994		1SS355

CAPACITORS

C911, C912		CCSRCH331J50
C901–C904,C942		CEAT471M6R3
C914, C941		CKSRYF104Z25

F

RESISTORS

R903, R906, R907, R909, R910		RS1/10S75R0F
R941, R942		RS1/10S75R0F
Other Resistors		RS1/16S###J

OTHERS

CN941	4P MINI DIN SOCKET	AKP7045
CN901	FFC CONNECTOR 17P	HLEM17S-1
JA902	RGB CONNECTOR	VKB1157

D FLKY ASSY [VWG2511]

SEMICONDUCTORS

IC101		PE5374B

SWITCHES AND RELAYS

S105–S108, S117, S119		VSG1024

CAPACITORS

C183		CKSRYB102K50
C151–C153		CKSRYB103K50
C102, C105, C182		CKSRYF104Z25
C104		CKSRYF104Z50

RESISTORS

All Resistors		RS1/16S###J

OTHERS

IC104	REMOTE RECEIVER UNIT	RPM7240-H4
V101	FLUORESCENT TUBE	VAW1078
CN101	15P CONNECTOR	VKN1246
0	CONNECTOR ASS'Y(2P)	VKP2322
X101	(5MHz)	VSS1142

E PWSB ASSY [VWG2482]

SWITCHES AND RELAYS

S101		VSG1024

F POWER SUPPLY UNIT [VWR1377]

OTHERS

⚠ CP1	PROTECTOR (800mA)	AEK7008

6. ADJUSTMENT

6.1 ADJUSTMENT ITEMS AND LOCATION

■ Adjustment Items

[Mechanism Part]

❶ Tangential and Radial Height Coarse Adjustment

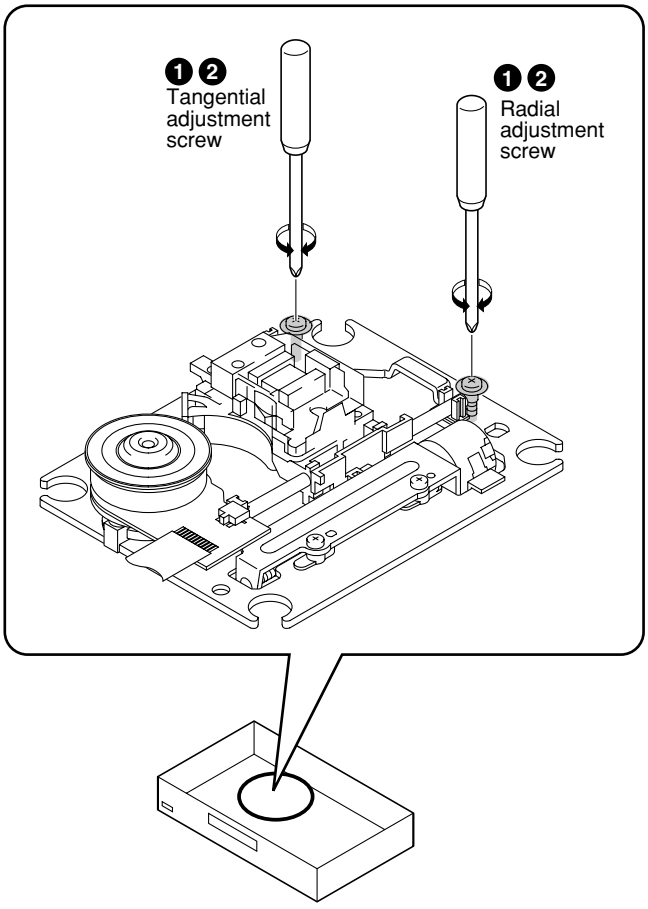
❷ DVD Error Rate Adjustment

[Electrical Part]

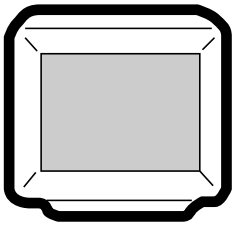
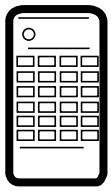
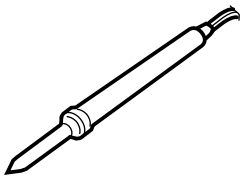
Electrical adjustments are not required.

■ Adjustment Points (Mechanism Part)

Cautions: After adjustment, adjustment screw locks with the Screw tight.



6.2 JIGS AND MEASURING INSTRUMENTS

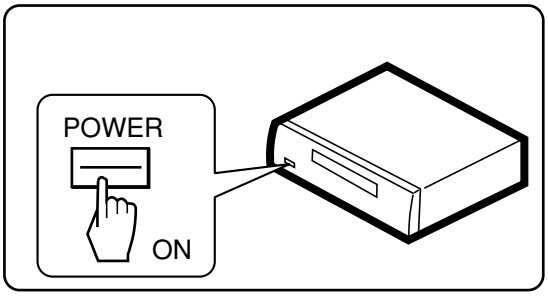
⊕ Screwdriver (large)	⊕ Screwdriver (medium)	 TV monitor	 Test mode remote control unit (GGF1381)
⊕ Precise screwdriver	DVD test disc (GGV1025)	 Soldering iron	Screw tight (GYL1001)

6.3 NECESSARY ADJUSTMENT POINTS

When	Adjustment Points	
■ Exchange Parts of Mechanism		
Exchange the 03 SD Pickup Assy-S	Mechanical point	❶, ❷ ＊ After adjustment, screw locks with the Screw tight.
	Electric point	———
Exchange the Traverse Mecha. Assy-S	Mechanical point	———
	Electric point	———
■ Exchange PCB Assy		
Exchange PC Board LOAB and DVDM ASSYS	Mechanical point	———
	Electric point	———

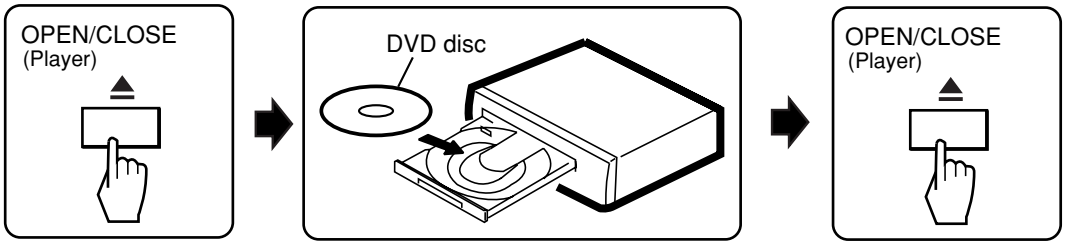
6.4 TEST MODE

POWER ON



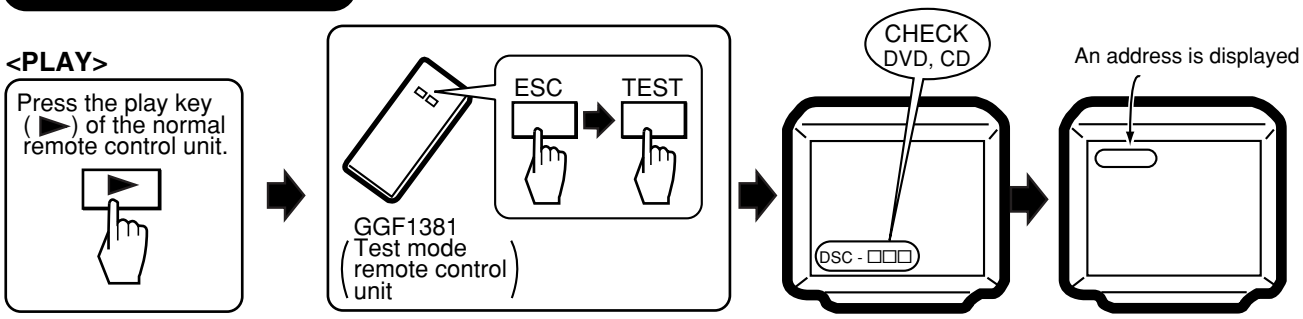
DISC SET

<TRAY OPEN> **<TRAY CLOSE>**



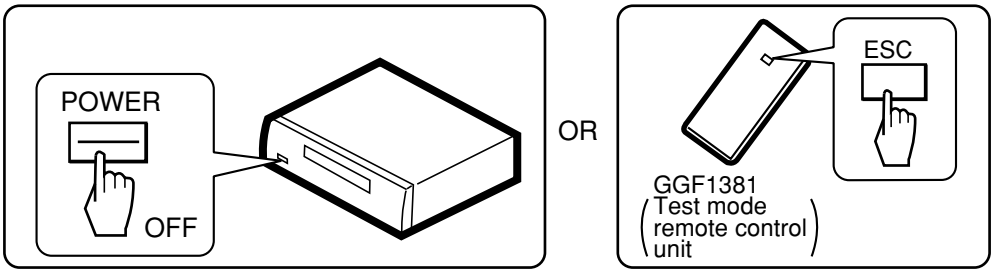
TEST MODE: PLAY

<PLAY>



Notes:
- After going into test mode, if you play back the disc, "DISC-NON" is displayed.
- The video signal and the audio signal are outputted during the test mode.
- The SKIP key and the SCAN key are effective during the test mode.

TEST MODE: OFF

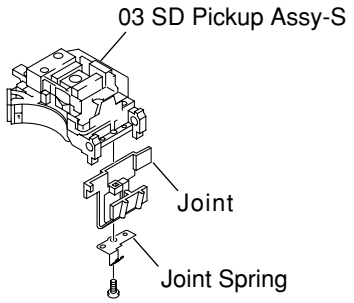


6.5 MECHANISM ADJUSTMENT

1 Tangential and Radial Height Coarse Adjustment

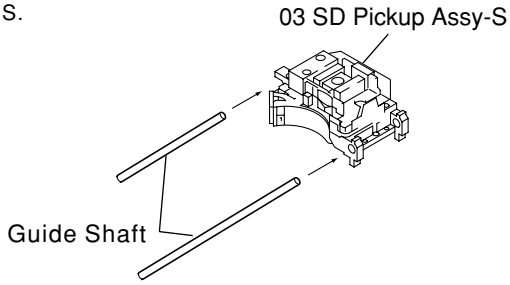
START

- Remove the 03 SD Pickup Assy-S from the Traverse Mecha. Assy.
- Remove the joint and the joint spring of the 03 SD Pickup Assy-S.

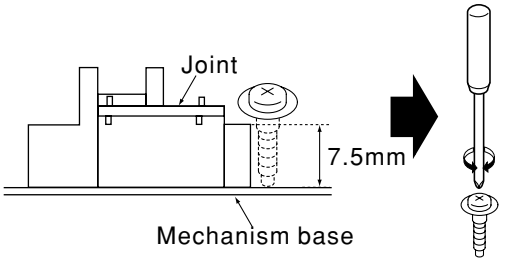


Note:
Before removing the flexible cable for the pickup, soldering of the pickup circuit is necessary.
For details, see "7.1.10 DISASSEMBLY".

- Pass through the guide shaft to a new 03 SD Pickup Assy-S.
- Attach it to the Traverse Mecha. Assy.



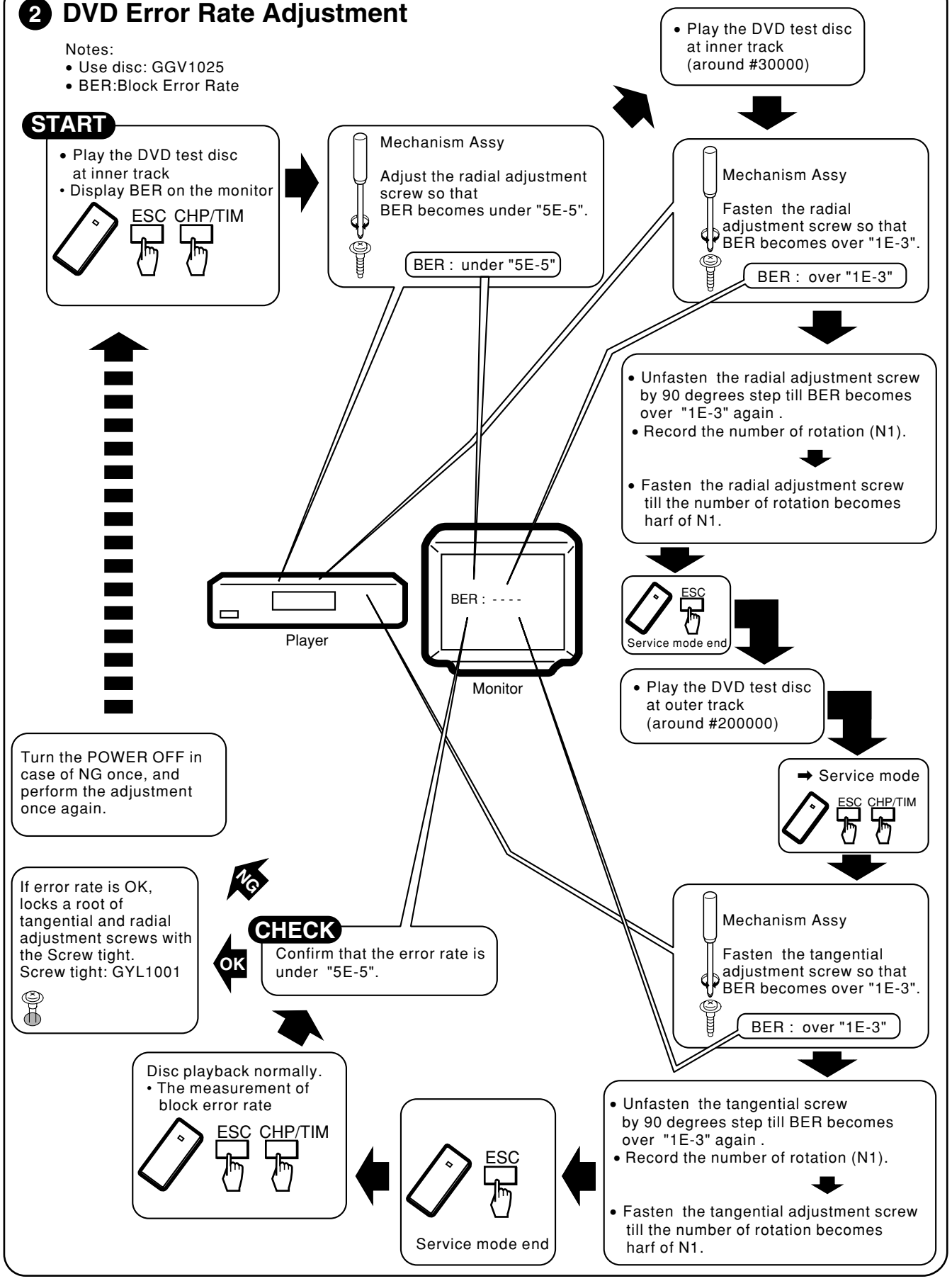
- Put the joint between the Tangential (or Radial) adjustment screw and the mechanism base and turn each screw to adjust the height.
(Refer to "6.1 ADJUSTMENT ITEMS AND LOCATION".)



- Attach the Traverse Mecha. Assy-S to the 04 LOADER Assy.
- Turn it over and attach the joint and the joint spring.
- Arrange the flexible cables.
(Refer to "7.1.10 DISASSEMBLY".)

2 DVD Error Rate Adjustment

Notes:
- Use disc: GGV1025
- BER:Block Error Rate


START
• Play the DVD test disc at inner track
• Display BER on the monitor
ESC CHP/TIM
Mechanism Assy
Adjust the radial adjustment screw so that BER becomes under "5E-5".
BER : under "5E-5"
• Play the DVD test disc at inner track (around #30000)
Mechanism Assy
Fasten the radial adjustment screw so that BER becomes over "1E-3".
BER : over "1E-3"
• Unfasten the radial adjustment screw by 90 degrees step till BER becomes over "1E-3" again .
• Record the number of rotation (N1).
• Fasten the radial adjustment screw till the number of rotation becomes harf of N1.
ESC
Service mode end
Player
BER : - - - -
Monitor
• Play the DVD test disc at outer track (around #200000)
➡ Service mode
ESC CHP/TIM
Mechanism Assy
Fasten the tangential adjustment screw so that BER becomes over "1E-3".
BER : over "1E-3"
• Unfasten the tangential screw by 90 degrees step till BER becomes over "1E-3" again .
• Record the number of rotation (N1).
• Fasten the tangential adjustment screw till the number of rotation becomes harf of N1.
ESC
Service mode end
Disc playback normally.
• The measurement of block error rate
ESC CHP/TIM
CHECK
Confirm that the error rate is under "5E-5".
NG
OK
If error rate is OK, locks a root of tangential and radial adjustment screws with the Screw tight.
Screw tight: GYL1001
Turn the POWER OFF in case of NG once, and perform the adjustment once again.

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 TEST MODE

■ Test Mode Functional Specification

① Test mode entry

In the power ON state, press the [ESC] (A8-5F) key and [TEST / RANDOM] (A8-5E) key in order of the Test mode remote control unit.

- Light the all FL and LEDs.
- OSD displays test mode.

Note:

* When pressing the keys of something, the FL displays "NO DISC" and the LED lighting disappears.

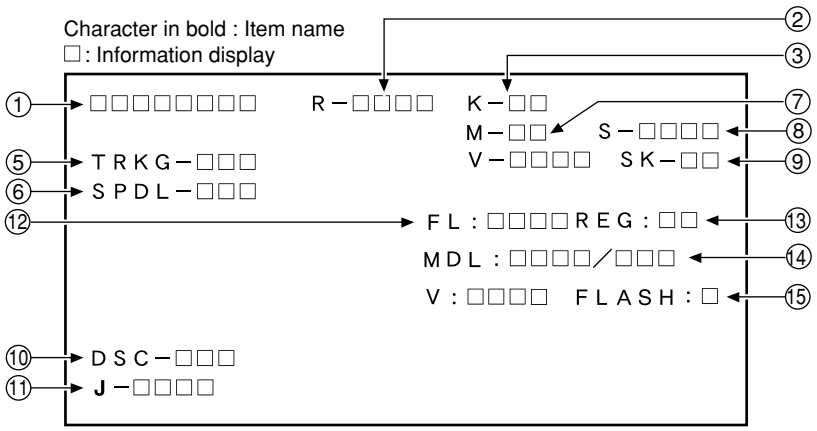
② Release the Test mode

- Turn off the power.
- Press the [ESC] (A8-5F) key of the remote control unit and reset it.

③ LD ON

DVD : Press the [TEST] (A8-5E) and [1] (A8-01) keys in order, and turn on the laser diode (650n).
CD : Press the [TEST] (A8-5E) and [4] (A8-04) keys in order, and turn on the laser diode (780n).

7.1.2 DISPLAY SPECIFICATION OF THE TEST MODE



① Address indication
The address being traced is displayed in number.
(as for the DVD, indication of decimal number is possible.)
DVD : ID indication (hexadecimal number, 8 digits)
[＊＊＊＊＊＊＊＊]
CD : ID indication [＊＊＊＊＊＊＊＊]

② Code indication of remote control unit [R – ＊＊＊＊]
In case of double code, display a 2nd code.

③ Main unit keycode indication [K – ＊＊]

⑤ Tracking status [TRKG – ＊＊＊]
Tracking on : [ON]
Tracking off : [OFF]

⑥ Spindle status [SPDL – ＊＊＊]
[OFF], [CLV]

⑦ Mechanism (loading) position value [M – ＊＊]
Unknown : [01] or [41]
Open state : [04]
Close state : [08]
During opening : [12]
During closing : [22]

⑧ Slider position [S – ＊＊＊＊]
In Side Switch ON : [01]
In Side Switch OFF : [00]

⑨ Output video system [V – ＊＊＊＊]
NTSC system : [NTSC]
PAL system : [PAL]
Automatic setting : [AUTO]

Scart terminal output [SK – ＊＊]
(Display only the WY model which can do the output setting of scart terminal.)
VIDEO : [00]
S-VIDEO : [01]
RGB : [02]

⑩ Disc sensing [DSC – ＊＊＊]
The type of discs loaded is displayed.
[DVD], [CD], [VCD], [ ]

⑪ Jitter value [J – ＊＊＊＊] Note:Don't use it.

⑫ Version of the FL controller [FL: ＊＊＊＊]

⑬ Region setting of the player [REG: ＊]
Setting value : [1] to [6]

⑭ Destination setting of the FL controller [MDL: ＊＊＊＊ / ＊＊＊]
Four characters in the front represent code 01.
Three characters in the back represent the destination code.
J: /J, K: /KU, /KC, /KU/KC, R: /RL/RD, RAM : /RAM, LB: /LB, WY: /WY

⑮ Version of the flash ROM [V: ＊＊. ＊＊]
Flash ROM size [FLASH = ＊＊]

7.1.3 FUNCTIONAL SPECIFICATION OF THE SHORTCUT KEY

Only during normal playback, the following shortcut keys can be assigned by pressing a required key after pressing the ESC key of the remote control unit. To quit, press the ESC key

Command Contents	Conditions	Remote Control Key Name	Remote Control Code
Memory clear and region / revision indication		CLEAR (∗1)	A8-45
Average value measurement of DVD error rate		5 (∗1)	A8-05
CD error rate measurement		5 (∗1)	A8-05
Scart terminal output : VIDEO	WY, models equipped with Scart terminal	AUDIO	AF-BE
Scart terminal output : S-VIDEO		SUBTITLE	AF-36
Scart terminal output : RGB		ANGLE	AF-B5
Progressive OFF	Only for progressive models	R_SKIP	A3-9D
Progressive ON		F_SKIP	A3-9C
FL indication of ID number		STEREO (∗1)	A8-4A
ZOOM ON (X2 -> X4 -> x1)		ZOOM	AF-37
Service mode indication (error rate indication, etc.)		CHP/TIM (∗1)	A8-13
Model information indication		CHAP (∗1)	A8-40
Title search Input mode IN Title No. input Search execution		SIDE A (∗1) Numbers (∗1) PLAY (∗1)	A8-4D A8-00 to A8-09 A8-17
Region confimation mode		AUDIO (∗1) Numbers (∗1)	A8-1E A8-01 to A8-08

∗1 : Test mode remote control unit

• Service mode indication (ESC + CHP/TIM keys)
ID Address
The error rate is always displayed in exponential notation, e.g., ∗.∗ ∗ e - ∗, for both DVDs and CDs.
EDC/ID/AV 1 error history (ID Address, EDC/ID Error, last eight errors)

• Calculation of the average error rate (ESC + "5" [Test mode remote control unit] keys)
The average of the last eight error rates is calculated and indicated in exponential notation. After the calculation is completed, "OK" or "NG" is displayed. If "NG" is displayed, the disc tray will open (for both DVDs and CDs)
For DVDs: OK with 5.0e-4 or less, for CDs: OK with 7.6e-3 or less

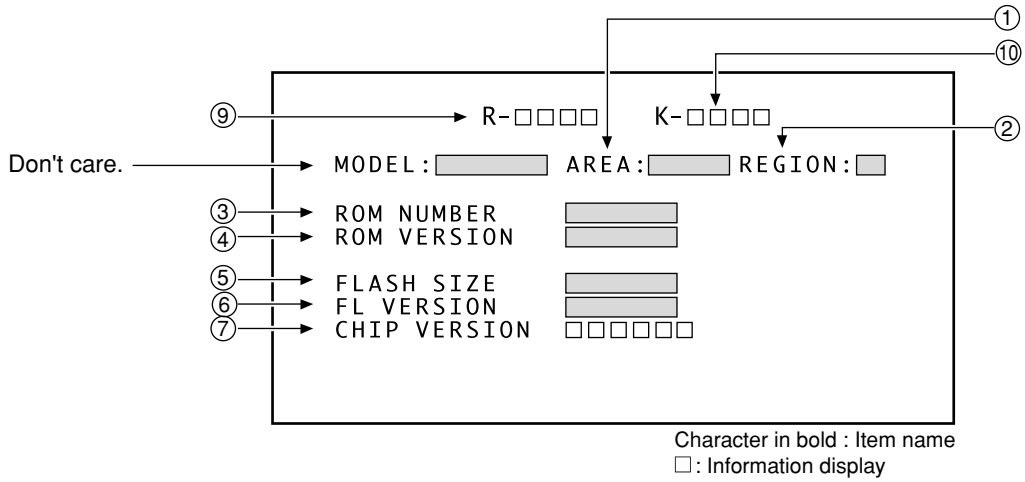
• Indication of model information (ESC + CHAP keys)
The items from 12 to 15 of the TEST MODE Indications are displayed. However, in the indications, S in the standard test mode is changed to CHIP VERSION, and M is changed to RF VERSION. For details, see 7.1.4.

• Region confirmation mode (ESC + AUDIO [Test mode remote control unit] + "1"-"8" [Test mode remote control unit] keys)
After you press the AUDIO key while holding the ESC key pressed and then input the region number, if the number is different from that set in the unit, an error message is displayed, and the tray opens.

7.1.4 SPECIFICATION OF MODEL INFORMATION DISPLAY

To display model information : Press the ESC key then the CHAP key.
To close the model information display : Press the ESC key.

• Display contents



① **Destination indication**
Display it according to model information set from the FL controller.
② **Region No.**
③ **Part number**
④ **ROM version**
⑤ **Flash size**

⑥ **FL controller version**
⑦ **CHIP VERSION**

⑨ **Remote control code**
⑩ **Key code of Main unit**

7.1.5 FUNCTIONAL SPECIFICATION OF THE SERVICE MODE

• Display during Service Mode

To enter Service Mode, press the CHP/TIM key while holding the ESC key pressed.
To quit, press the ESC key.

Service mode display

① ID Address
② Error rate (always displayed), in exponential notation

ERROR RATE : ＊＊＊＊＊＊＊
(＊＊＊＊)
Number of error

• Calculation of the average error rate
For DVDs: OK with 5.0e-4 or less, for CDs: OK with 7.6e-3 or less

ex) For DVDs

• Step 1

△△e -□

△△e -6	: OK
△△e -5	: OK
△△e -4	: Refer to Step 2
△△e -3	: NG
△△e -2	: NG

• Step 2

△△e -4

3.0e -4	: OK
4.0e -4	: OK
5.0e -4	: OK
6.0e -4	: NG
7.0e -4	: NG

③ EDC/ID error history (ID Address, EDC/ID errors, last eight errors)

Note:
＊ Error of AV1 is not supported in this player.

Indication plan contents

Character in bold : Item name
□: Information display

7.1.6 METHOD FOR DIAGNOSING DEGRADATION OF THE LDS ON THE PICKUP ASSY

Case when this diagnosis is required :
When playback of any disc, including a test disc (DVD: GGV1025, CD: STD-905), cannot be performed

■ How to diagnose

In the case mentioned above, degradation of the laser diodes (LDs) mounted on the 03 SD Pickup Assy-S is suspected. Measure the voltage between the two ends of one of the resistors mentioned below.

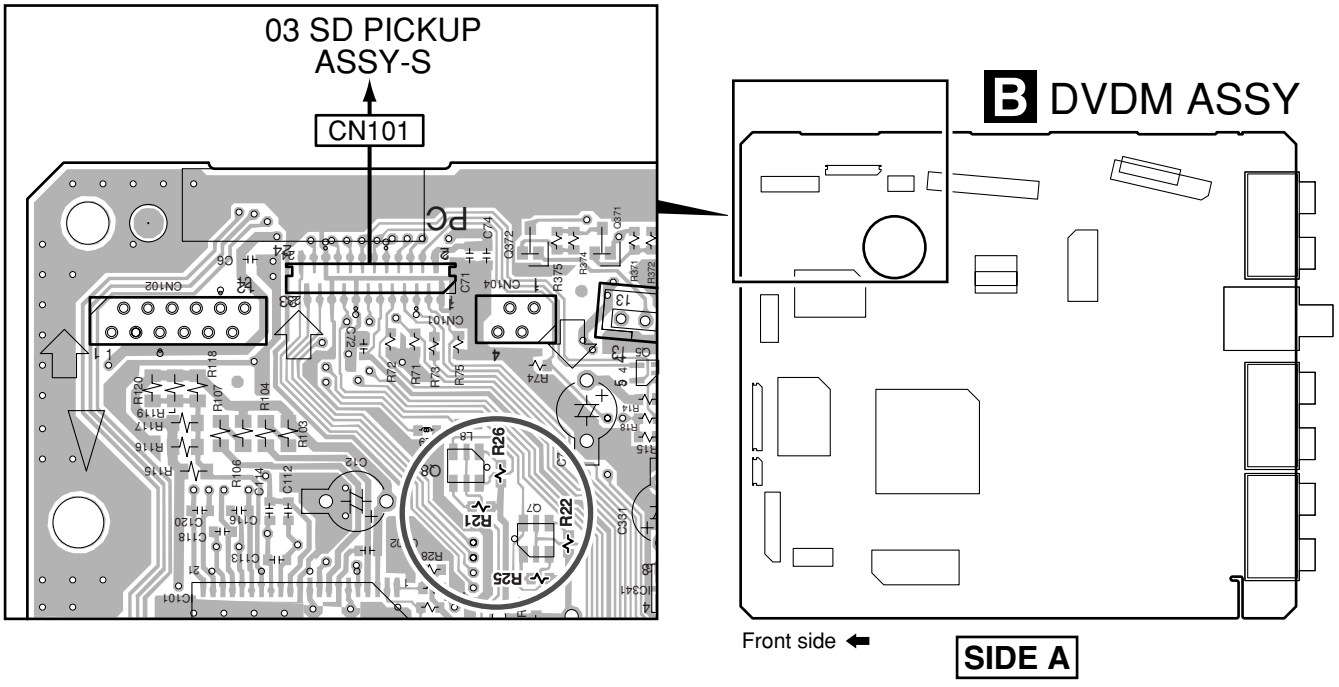
- **No playback of a DVD :**

  Measure the voltage between the two ends of R22 or R25 on the DVDM Assy.
  If the voltage is 0.4 V or higher, the 650-nm LD is degraded.

- **No playback of a CD :**

  Measure the voltage between the two ends of R21 or R26 on the DVDM Assy.
  If the voltage is 0.4 V or higher, the 780-nm LD is degraded.

If the measurements show degradation of an LD, replace the 03 SD Pickup Assy-S.



7.1.7 TROUBLE SHOOTING

No.	Symptoms	Diagnosis Contents	Possible Defective Points
1	The power is not turned on.	Check the voltage of EV4.0V, –28V, FLDC + and FLDC - on the POWER SUPPLY Unit.	**POWER SUPPLY Unit**
		Are wires of output connector (POWER SUPPLY Unit) and CN301 (DVDM Assy) disconnected or damaged ?	Connector / cable
		Check that the voltage at IC101-pin 22 (KEY0) on the FLKY Assy becomes 0 V when the POWER key is pressed and 3.3 V when it is released.	**FLKY Assy** Tact SW (when operation of only the POWER key on the main unit is not accepted)
		Check that the following voltage is output : IC341-pin 5 : 3.3V on the DVDM Assy	**DVDM Assy** 3.3V Regulator IC (IC341)
		Check that the voltage at IC101-pin 17 (SEL IR) on the FLKY Assy is in the range between 0 and 3.3 V while receiving signals from the remote control unit when any key on it is pressed.	**FLKY Assy** Remote receiver section (when operation of only the POWER key on the remote control unit is not accepted)
2	An opening screen is not displayed on the monitor (The FL display lights. The mechanism does not work.)	Is the level at both IC101-pin 12 (RESETOUT) and pin 11 (POWER ON) on the FLKY Assy "H" ?	**FLKY Assy** FL Control IC (IC101)
		• Check the voltage of E+6.8V and SW3.3V on the POWER SUPPLY Unit. • Check the voltage of Pcont is about 3V on the POWER SUPPLY Unit.	**POWER SUPPLY Unit**
		Check that the following voltage are output : IC311-pin 5 : 5V on the DVDM Assy.	**DVDM Assy** 5V Regulator IC (IC311)
		Is a resonator (X201 : 27MHz) on the DVDM Assy oscillating ?	**DVDM Assy** Crystal resonator (X201)
		• Is a signal input into IC203-pin26 (PCE#) on the DVDM Assy ? (Is a signal "H" for 80 mS and then "L" after the power is turned on ?) → Communication with flash ROM. • Are the signals input into IC202-pin 16 (DWE#), pin 19 (DCS#) and pin 38 (SDCLK) on the DVDM Assy ? (Is a signal fluctuating ?) → Communication with SDRAM	**DVDM Assy** DVD IC (IC201) Flash ROM (IC203) SDRAM (IC202)
		Is a signal output from IC203-pin 28 (PRD#) on the DVDM Assy? (Is a signal fluctuating for several hundred mS after the power is turned on ?)	**DVDM Assy** Flash ROM (IC203)
		Is a signal input into IC101-pin 16 (ACK) on the FLKY Assy ? (Is a signal fluctuating ?) → Communication with FL Control IC	**DVDM Assy** DVD IC (IC201) **FLKY Assy** FL Control IC (IC101)
		Is a signal output from IC101-pin 10 (XREADY) on the FLKY Assy ? (Is a signal fluctuating in the range of 0-3V ?)	**FLKY Assy** FL Control IC (IC101)
		Are the signals output from IC101-pin 9, pin 8 and pin 7 on the FLKY Assy ? (in the range of 0-3V)	**DVDM Assy** DVD IC (IC201) – **FLKY Assy** FL Control IC (IC101) communication line
		Are the signals of IC204-pin 5(SDA) and pin 6(SCL) on the DVDM Assy fluctuating for one or two seconds after the power is turned ?	**DVDM Assy** EEPROM (IC204)
3	An opening screen is not displayed on the monitor (The FL display lights. The mechanism does not work.)	Check the video signal path between DVD IC (DVDM Assy IC201) and video-out terminal (see the block diagram)	**DVDM Assy** Video circuit after DVD IC (IC201)

No.	Symptoms	Diagnosis Contents	Possible Defective Points
4	A tray cannot be opened. (An opening screen is displayed on the monitor)	Does the voltage of CN103-pin 3 and pin 5 on the DVDM Assy change normally ? Pin 3 (SW2(TRIN)): Tray is fully closed: "L" Pin 5 (SW1(TROUT)): Tray is fully opened: "L"	**LOAB Assy** Tray SW (S101)
		Is a LOAD-DRV signal reaching ?	**DVDM Assy** DVD IC (IC201)
		Are the signals output from IC101-pin 36 and pin 37 (CN103-pin 1 and pin 2) on the DVDM Assy ? Pin 36: Approx. 6V during opening tray approx. 0V during closing tray. Pin 37: Approx. 0V during opening tray approx. 6V during closing tray.	**DVDM Assy** FTS Driver IC (IC101)
		Are wires of CN104 and CN103 on the DVDM Assy disconnected or damaged ?	Connector / cable
		Does the voltage of CN102-pin 12 change by pressing the Inside switch.	Inside switch
5	Playback impossible (no focusing)	Are the signals output from IC101-pin 34 (FOCS_DRV) and pin 35 (FOCS_RTN) on the DVDM Assy ?	**DVDM Assy** FTS Driver IC (IC101)
		Does 650-nm LD emit light ? Does a pickup lens move up / down ? Does an actuator spring bend ?	Pickup
		Are plastic parts damaged ? Or is a shaft detached ? Is the turntable detached or tilted ?	Mechanism section (motor)
		Is flexible cable of CN101 on the DVDM Assy disconnected or damaged ?	Flexible cable / connector
		Is signal output from IC201-pin 42 (FOSO) on the DVDM Assy ? (Device control of about 1.4 V is output usually. It is fluctuated by about ± 250 mV with focus up / down.)	**DVDM Assy** DVD IC (IC201)
6	Playback impossible (Spindle does not turn)	Are the signals output from IC101-pin 12 (W), pin 13 (V) and pin 14 (U) on the DVDM Assy ? Is pin 41 (STBY) fixed LOW and is pin 38 (ENDM) fixed LOW ?	**DVDM Assy** FTS Driver IC (IC101)
		Is there any part detached from the spindle motor ? Or Is there any foreign object lodged in it ?	Mechanism section (Spindle motor)
		Are wires of CN102 on the DVDM Assy disconnected or damaged ?	Flexible cable / connector
		Is signal output from IC201-pin 37 (DMSO) on the DVDM Assy ?	**DVDM Assy** DVD IC (IC201)
7	Playback impossible (Playback stops)	Does 650-nm LD deteriorate ? If the voltage at each both ends of R22 and R25 on the DVDM Assy is 0.4 V or more, the 650-nm LD is definitely deteriorated.	650-nm LD deteriorated. (When playback of a DVD is impossible)
		Does 780-nm LD deteriorate ? If the voltage at each both ends of R21 and R26 on the DVDM Assy is 0.4 V or more, the 780-nm LD is definitely deteriorated.	780-nm LD deteriorated. (When playback of a CD is impossible)
		Is there abnormality in FG waveform ?	**DVDM Assy** FG output : FTS Driver IC (IC101)
		Are there scratches or dirt on the disc ?	Disc
8	Picture disturbance during playback (block noise, freeze, other)	Are there scratches or dirt on the disc ? Is there a problem with the format of the disc ?	Disc
9	No sound (Picture is normal)	Check the waveform (ABCK, ALRCK, ACLK, ASDATA).	**DVDM Assy** DVD IC (IC201)
		Is signal output from audio DAC IC on the DVDM Assy ? Main CH : IC501-pin 7, pin 8	**DVDM Assy** Audio Dac IC (IC501)

● Symptoms That May Occur When Any Of The Following ICs Is In Failure

IC	Symptoms
EEP ROM (DVDM Assy : IC204)	User's data cannot be stored in memory. The ID number is lost.
16M Flash ROM (DVDM Assy : IC203)	The power cannot be turned on. Downloading of the firmware cannot be performed.
DVD IC (DVDM Assy : IC201)	Any kind of symptoms (no power, a failure in any of the servo, video and audio systems, etc.) may be generated, because the DVD processing is performed by a single chip.
64M SDRAM (DVDM Assy : IC202)	No power. Block noise is generated during playback.

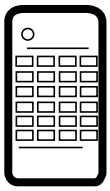
7.1.8 ID NUMBER AND ID DATA SETTING

Caution:
For the DVD players compatible with DVD-RW, for playback of a DVD-RW disc (CPRM), it is necessary that an individual ID number and ID data are set for each player. If the ID number and ID data be not properly set in the manner described below, future operations cannot be guaranteed. The ID number is written on the yellow label at the rear panel of the player.
If there is no yellow label, before downloading FLASH ROM, take note of the ID number set following the procedures outlined in "ID Number Confirmation Mode" on the next page.

Note: Enter ID numbers while the unit is in Stop mode so that the values set will be immediately written to the flash ROM.

Setting an ID number or ID data is required in the following case:
If "No ID Number!" or "NO ID DATA!" is displayed on the TV screen and on the FL display for a few seconds immediately after the power to the player is turned on or during Stop mode.

JIGS AND MEASURING INSTRUMENTS

 Service Remote Control Unit [GGF1381]	DVD Data Disc [GGV1175 (& GGV1171)]

Note) GGV1175 is to be released in May, 2004.

ID Number Input Mode

① To enter ID Number Input Mode, with no ID number set, such as in a case of immediately after upgrading the firmware, press the ESC key then the STEREO key.

Note: If a previous ID number and ID data, such as a factory-preset ID number and ID data, are maintained, the unit enters ID Number Confirmation Mode when the above keys are pressed. However, if only an ID number is maintained, the unit enters ID Data Input Mode.

② Enter a 9-digit ID number. The ID number is also displayed on the FL display.

③ By pressing the CLEAR key without having input a number, you can exit this mode. Each press of this key after a number has been input deletes one digit.

```
[Player's ID Number Setting]
 ID Number ?
② - - - - - - - - -
③ <CLEAR>  Exit

 Input ID Number !
```

④ After entering all 9 digits, if you press the PLAY key, the unit enters Compare mode. Enter the same ID number again. Only if your two input numbers match, the ID number is set. Compare mode helps eliminate mistyping of the ID number.

Note: If you press the PLAY button before inputting a 9-digit ID number, the unit returns to Step ② without doing anything else.

⑤ After entering all 9 digits, if you press the SEARCH key, the unit unconditionally sets the input number as the ID number. Then the unit automatically enters Player's Data Input Mode. (The SEARCH key is not accepted after all 9 digits have been entered.)

```
[Player's ID Number Setting]
 ID Number ?
  0 0 0 0 0 0 0 0 1

④ <PLAY>      Compare Mode
⑤ <SEARCH>  Enter

 Input ID Number !
```

⑥ This display appears when the PLAY key is pressed in Step 4. Enter a 9-digit number to compare. The number is also displayed on the FL display.

⑦ By pressing the CLEAR key without having input a number, the unit returns to Step ② without doing anything else. Each press of this key after a number has been input deletes one digit.

```
[Player's ID Number Setting]
 ID Number ?
    0 0 0 0 0 0 0 0 1
 Compare
⑥   * * * * * * * * *


 Input ID Number !
```

⑧ After entering all 9 digits, if you press the PLAY key, the unit compares the numbers input in Steps ② and ⑥, and only if the numbers match, that number is set as the ID. Then the unit automatically enters ID DATA Input Mode. If the numbers do not match, the disc tray is opened, and the unit exits ID Number Input Mode.

Note: If you press the PLAY button before inputting a 9-digit ID number, the unit returns to Step ⑥ without doing anything else.

```
[Player's ID Number Setting]
 ID Number ?
    0 0 0 0 0 0 0 0 1
 Compare
    0 0 0 0 0 0 0 0 1

⑧ <PLAY>  Enter

 Input ID Number !
```

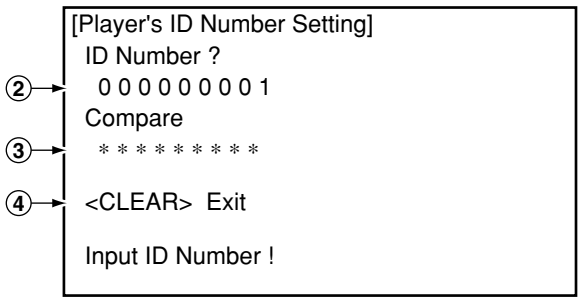
ID Number Confirmation Mode

① To enter ID Number Confirmation Mode after the ID number and the ID data are set, press the ESC key then the STEREO key.

② The ID number already set is displayed.
(It is also displayed on the FL display.)

③ Enter a 9-digit number for comparison. This is not required when you only wish to check the ID number visually.
(The number is also displayed on the FL display.)

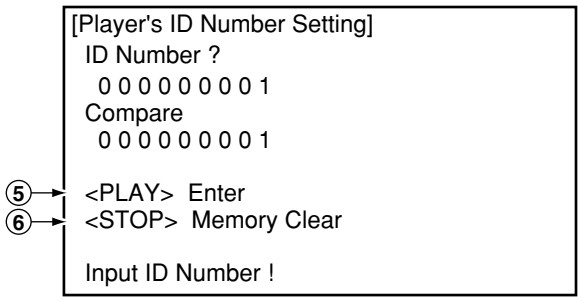
④ By pressing the CLEAR key without having input a number, you can exit this mode. Each press of this key after a number has been input deletes one digit.



⑤ After entering all 9 digits, if you press the PLAY key, the unit compares the number entered in Step ② with the ID number set, and only if the numbers match, the unit automatically exits ID Number Confirmation Mode. If an ID data has not been entered, the unit enters ID DATA Input Mode. If the numbers do not match, the disc tray is opened, and the unit exits ID Number Confirmation Mode.

Note: If you press the PLAY button before inputting a 9-digit ID number, the unit returns to Step ④ without doing anything else.

⑥ After entering all 9 digits, if you press the STOP key, the unit compares the number entered in Step ③ with the ID number set, and only if the numbers match, the unit automatically deletes the ID number and exits this mode. If the numbers do not match, the disc tray is opened, and the unit exits this mode. (The STOP key is not accepted after all 9 digits have been entered.)



• Indication of an ID number already set

An ID number already set is displayed in the following cases:

1) When the ESC key then the CLEAR key are pressed, user settings are cleared, then the ID number set is displayed on the screen. In this case, the ID number is not displayed on the FL display.
2) When the unit enters ID Number Confirmation Mode by your pressing the ESC key then the CLEAR key, the ID number set is displayed. In this case, the ID number is also displayed on the FL display.
If you only need to confirm the ID number, you can exit this mode by pressing the CLEAR key or turning off the power.

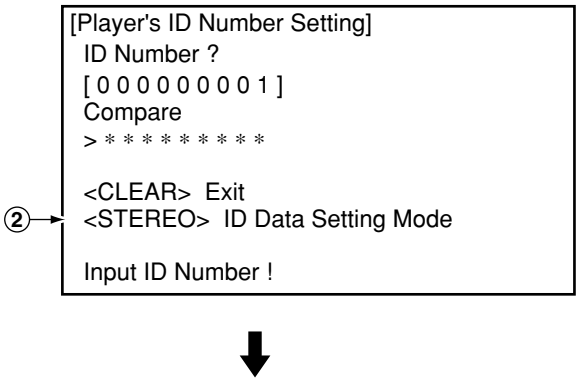
• Indication when no ID number is set

If no ID number is set, the message "No ID Number!" flashes on the screen and FL display for a few seconds after the power is turned on or during Stop mode.

ID DATA Input Mode

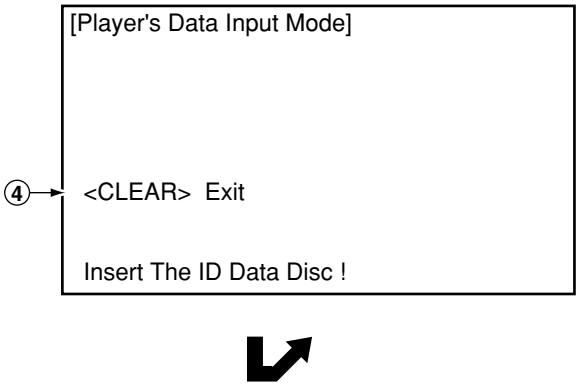
① To enter ID DATA Input Mode, with the ID number set, press the ESC key then the STEREO key.

② When the STEREO key is pressed, the unit enters ID DATA Input Mode.



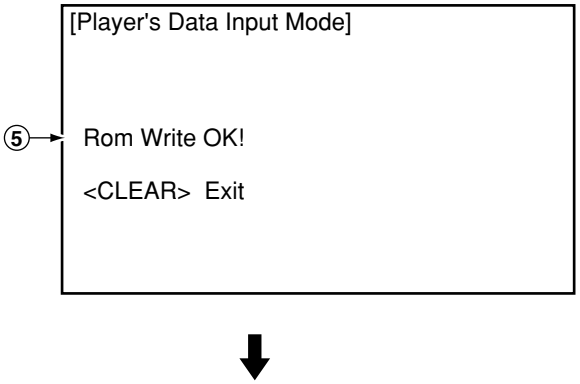
③ If the DVD DATA DISC is loaded in this mode, the unit automatically starts reading the data.
(If the DVD DATA DISC has already been loaded, the unit does not start reading the data. In this case, open then close the tray.)

④ To exit this mode, press the CLEAR key. While data are being read from the DVD DATA DISC, you cannot exit this mode.

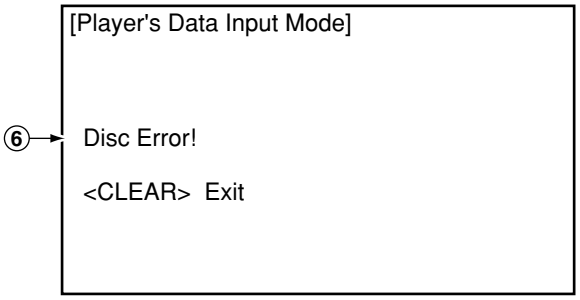


⑤ When writing of the data read from the disc to flash ROM is completed, "Rom Write OK!" is displayed. After seeing this message, you can exit this mode by pressing the CLEAR key.

Note: Whether or not the data have been written to flash ROM can be confirmed by watching for the message "Rom Write OK!" being displayed after the disc is read.



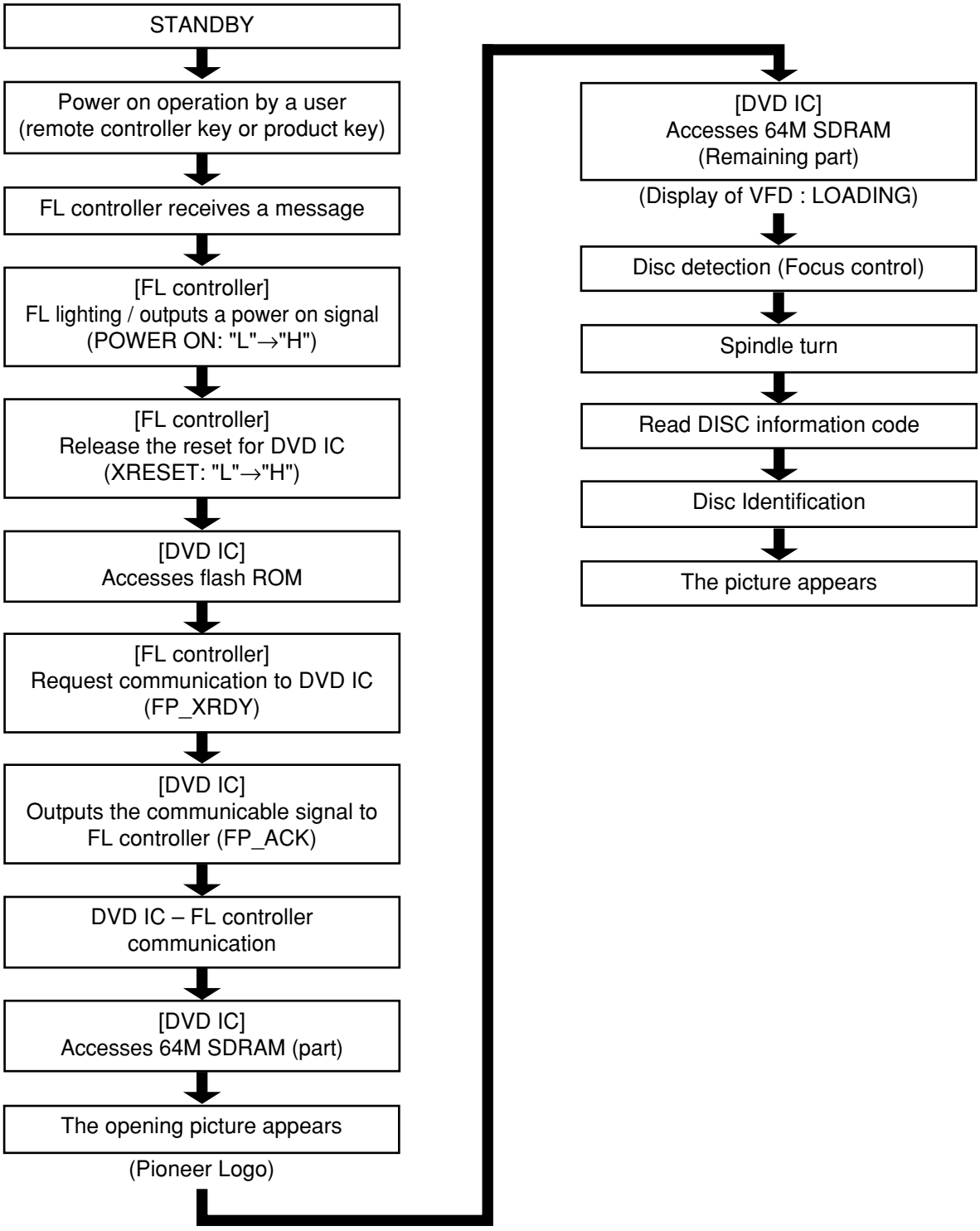
⑥ If the data cannot be read from the disc, "Disc Error!" is displayed on the screen, and the disc is ejected.



• Indication when the data have not been set
If no ID data are set after the ID number is changed, the message "NO ID DATA" flashes on the screen and FL display for a few seconds after the power is turned on or during Stop mode.

7.1.9 SEQUENCE AFTER POWER ON

Flow chart from power on to the picture output


STANDBY
Power on operation by a user (remote controller key or product key)
FL controller receives a message
[FL controller] FL lighting / outputs a power on signal (POWER ON: "L"→"H")
[FL controller] Release the reset for DVD IC (XRESET: "L"→"H")
[DVD IC] Accesses flash ROM
[FL controller] Request communication to DVD IC (FP_XRDY)
[DVD IC] Outputs the communicable signal to FL controller (FP_ACK)
DVD IC – FL controller communication
[DVD IC] Accesses 64M SDRAM (part)
The opening picture appears
(Pioneer Logo)
[DVD IC] Accesses 64M SDRAM (Remaining part)
(Display of VFD : LOADING)
Disc detection (Focus control)
Spindle turn
Read DISC information code
Disc Identification
The picture appears

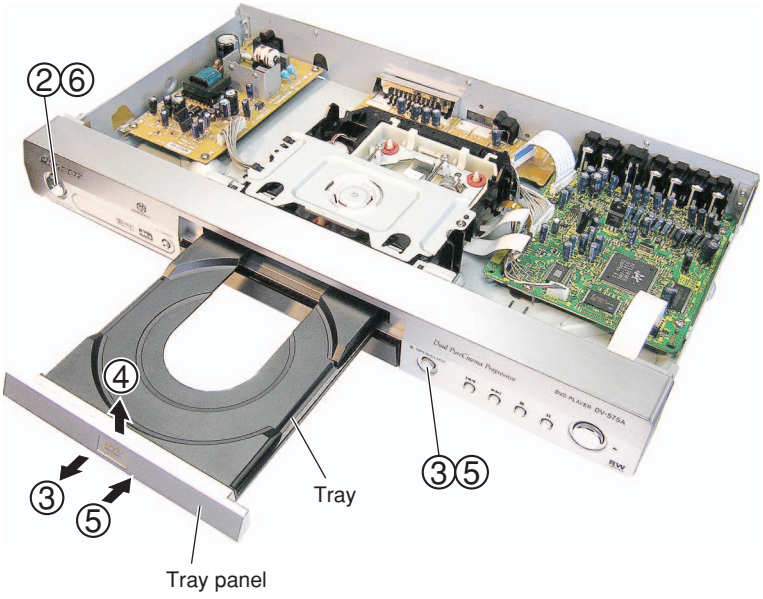
7.1.10 DISASSEMBLY

Note: Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.

Diagnosis of the DVDM Assy

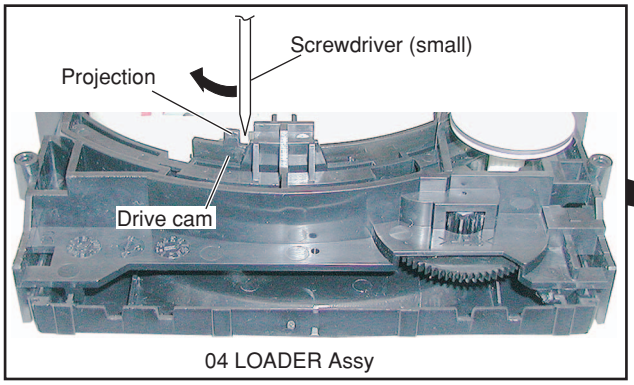
1 Bonnet and Tray panel

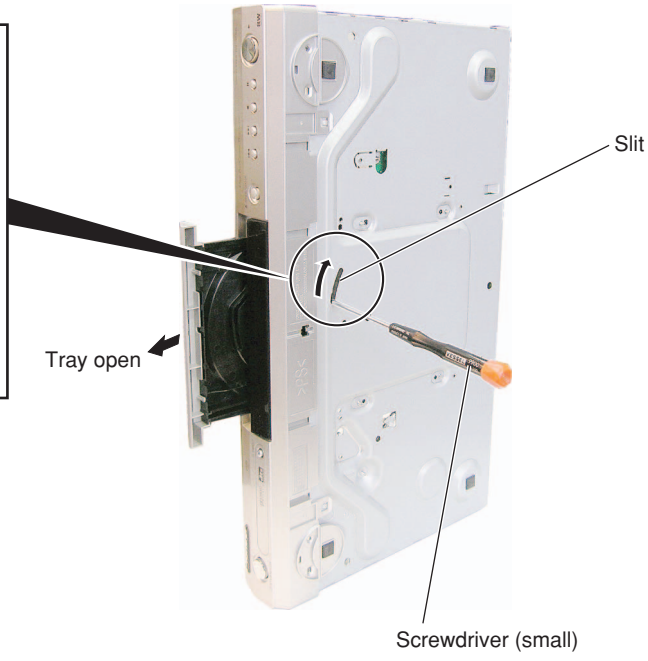
① Remove the bonnet by removing the seven screws.
② Press the ⏻ STANDBY/ON button to turn on the power.
③ Press the ⏏ button to open the tray.
④ Remove the tray panel.
⑤ Press the ⏏ button to close the tray.
⑥ Press the ⏻ STANDBY/ON button to turn off the power.



How to open the Tray when the power cannot be on

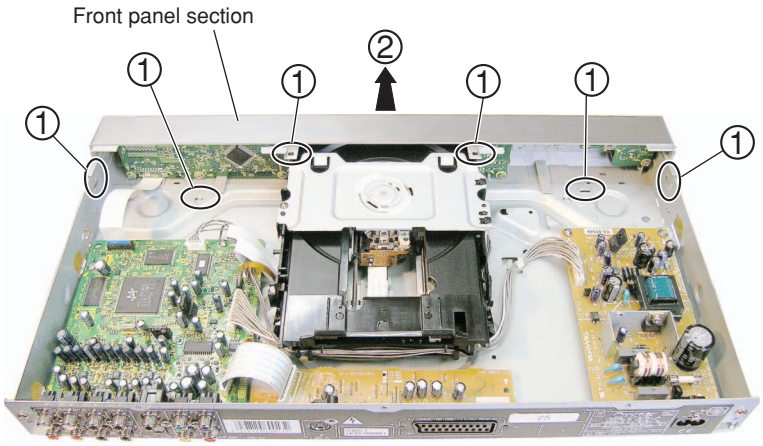
Insert a screwdriver (small) into the slit located at the bottom of the unit, and slide the projection of the drive cam in the 04 LOADER Assy in the direction of the arrow, as indicated in the photo. If the tray pops out a little, fully pull it out by a hand.





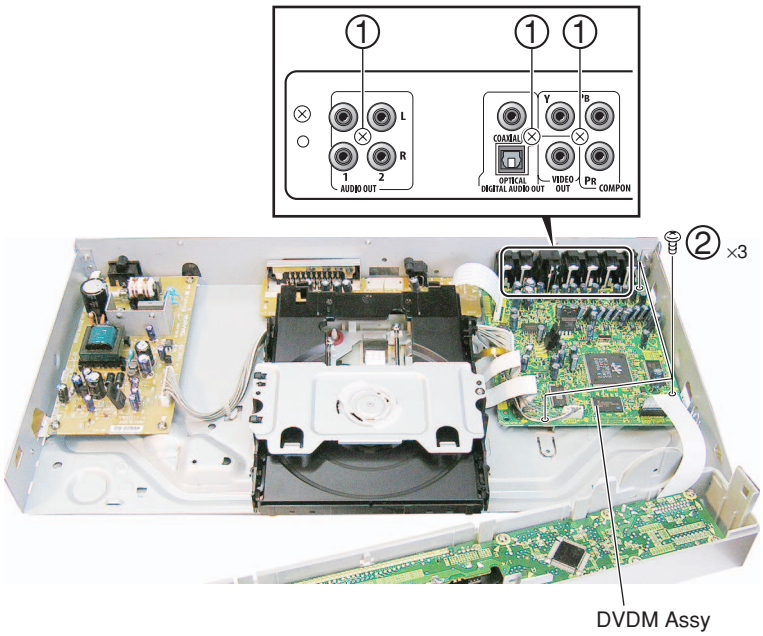
2 Front panel section

① Remove the six hooks.
② Remove the front panel section.



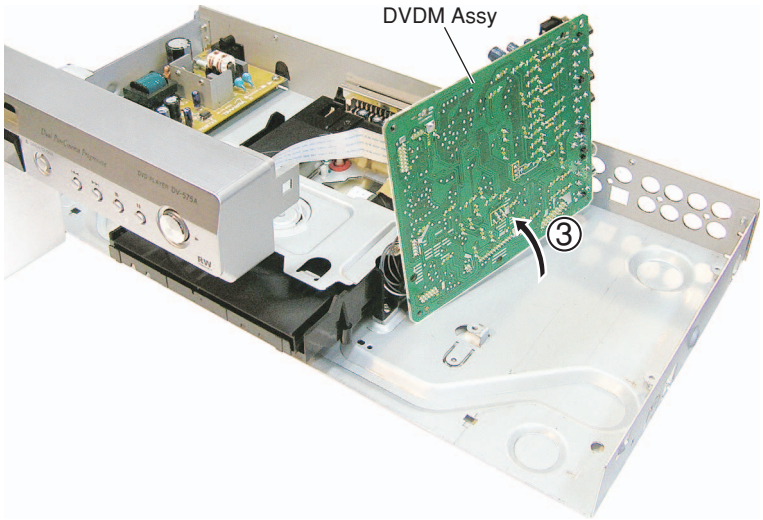
3 DVDM Assy

① Remove the three screws.
② Remove the three screws.



③ Remove the DVDM Assy and stand it against the other parts.

Diagnosis



4 04 LOADER Assy

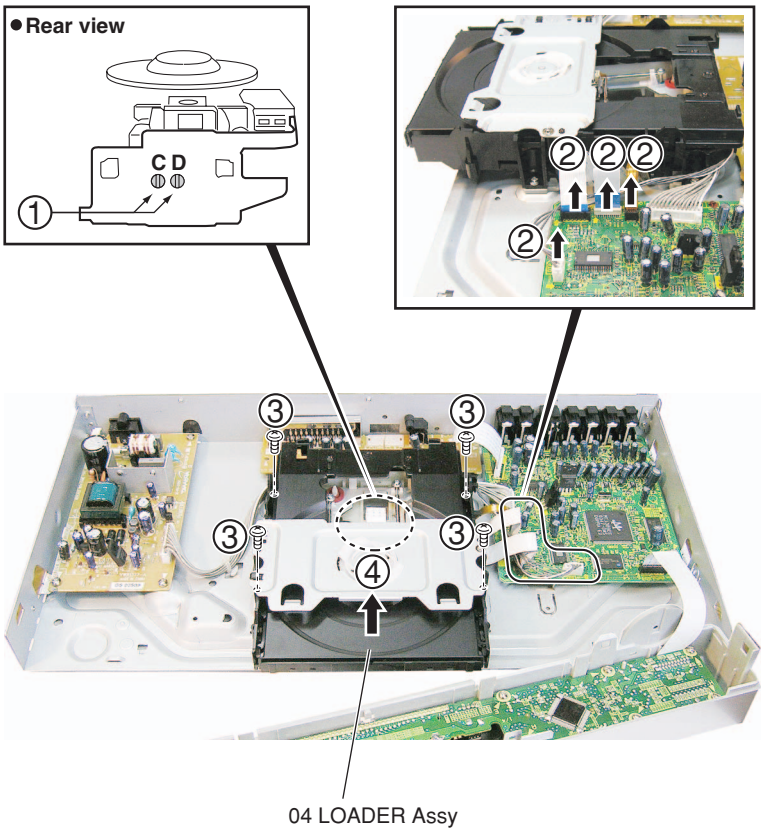
① Short-circuit two points of C and D by soldering.

Note: After replacement, connect the flexible cable, then remove the soldered joint (open).

② Disconnect the four connectors.

③ Remove the four screws.

④ Remove the 04 LOADER Assy.

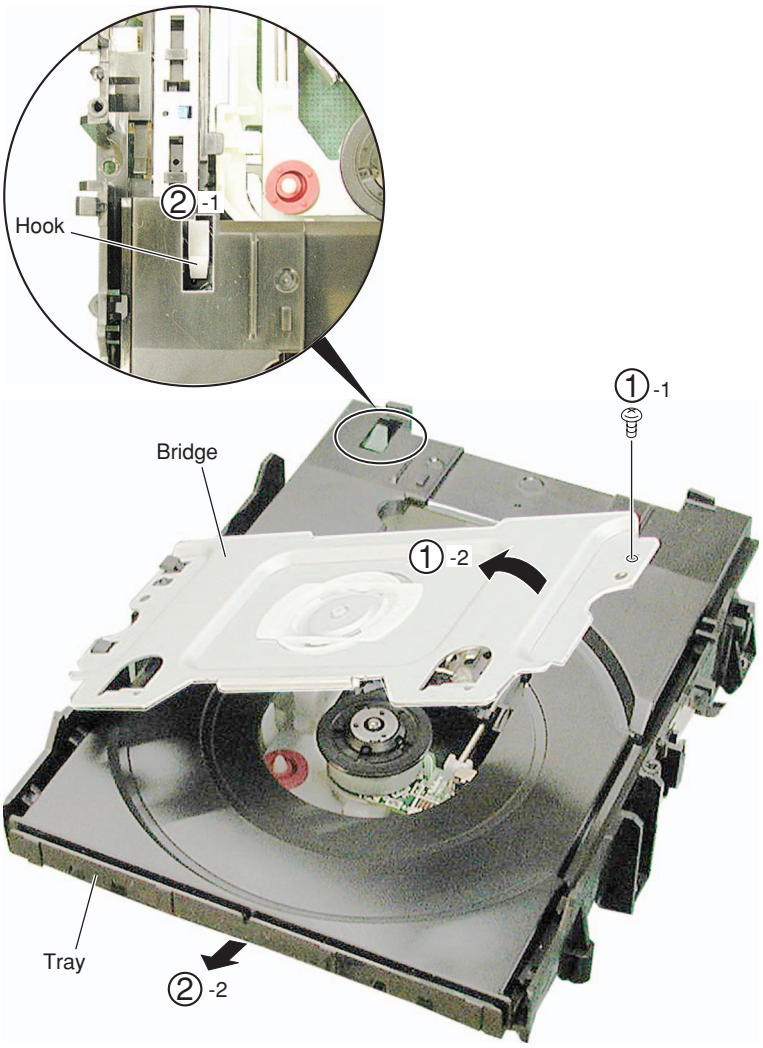


Removing the Traverse Mecha. Assy-S and 03 SD Pickup Assy-S

1 Bridge and Tray

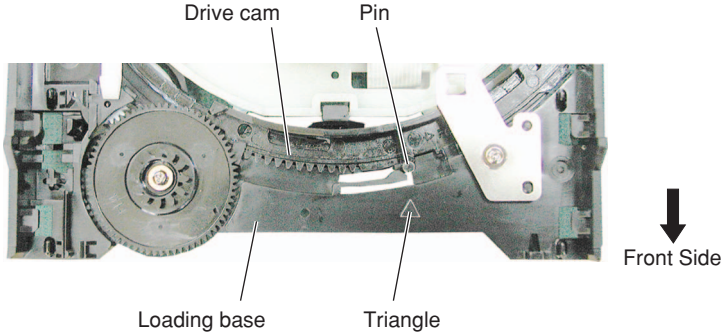
① Remove the bridge by removing the one screw.

② Pull out the tray, then remove it by pressing the hook.



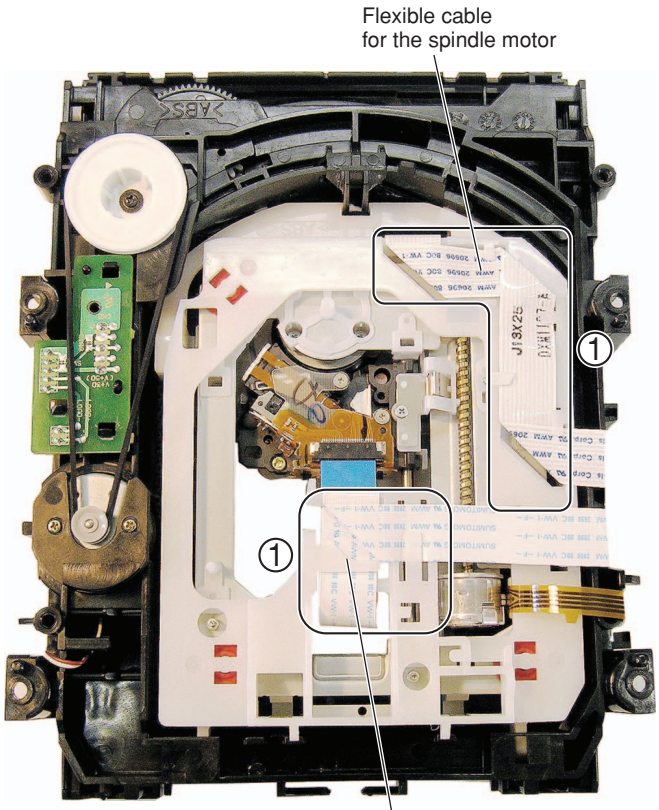
Note when reinserting the Tray

When reinserting the tray, first align the triangle printed on the loading base and the pin of the drive cam, then insert the tray.



2 Traverse Mecha. Assy-S

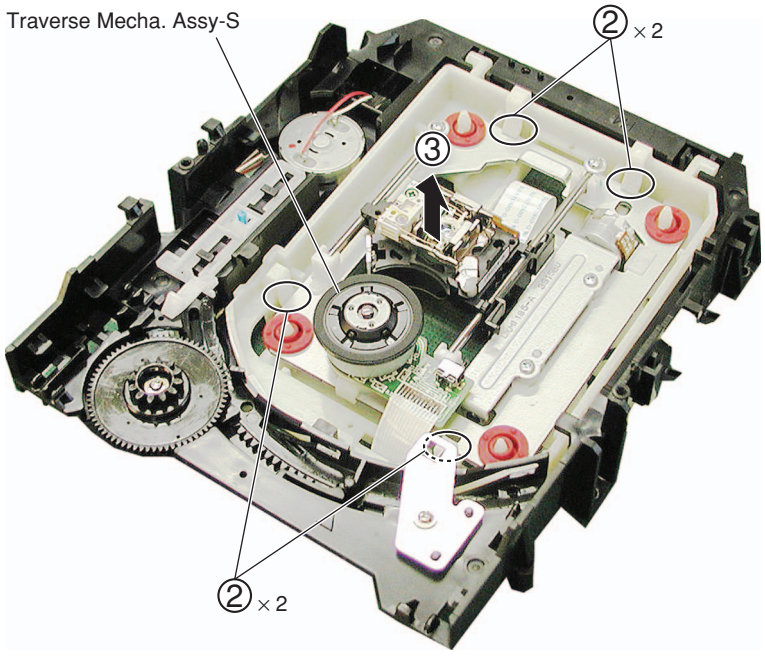
① Dislodge the flexible cables from their packaged placement.



● Bottom View

② Remove the four hooks.

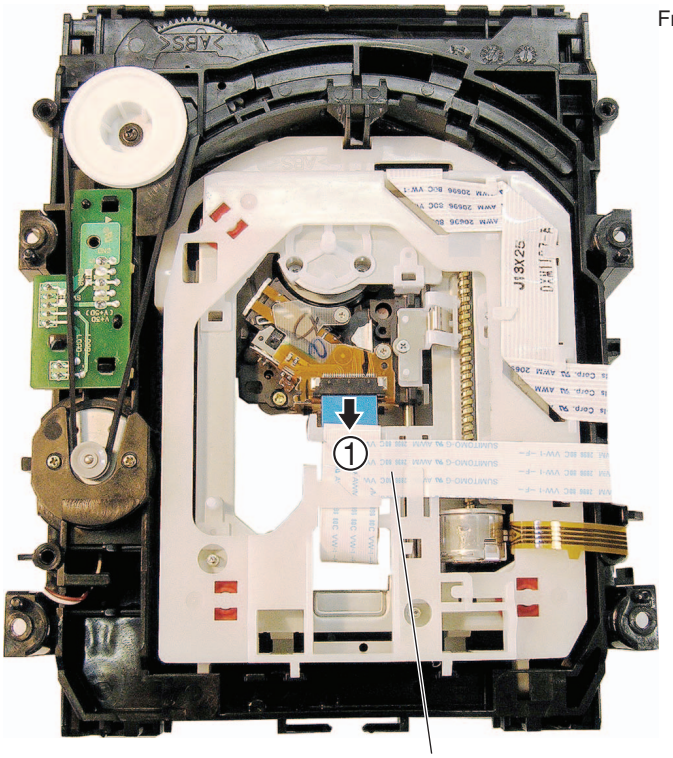
③ Remove the Traverse Mecha. Assy-S.



3 03 SD Pickup Assy-S

Note: The 03 SD Pickup Assy-S can be removed without removing the Traverse Mecha. Assy-S. (shown as Step 2.)

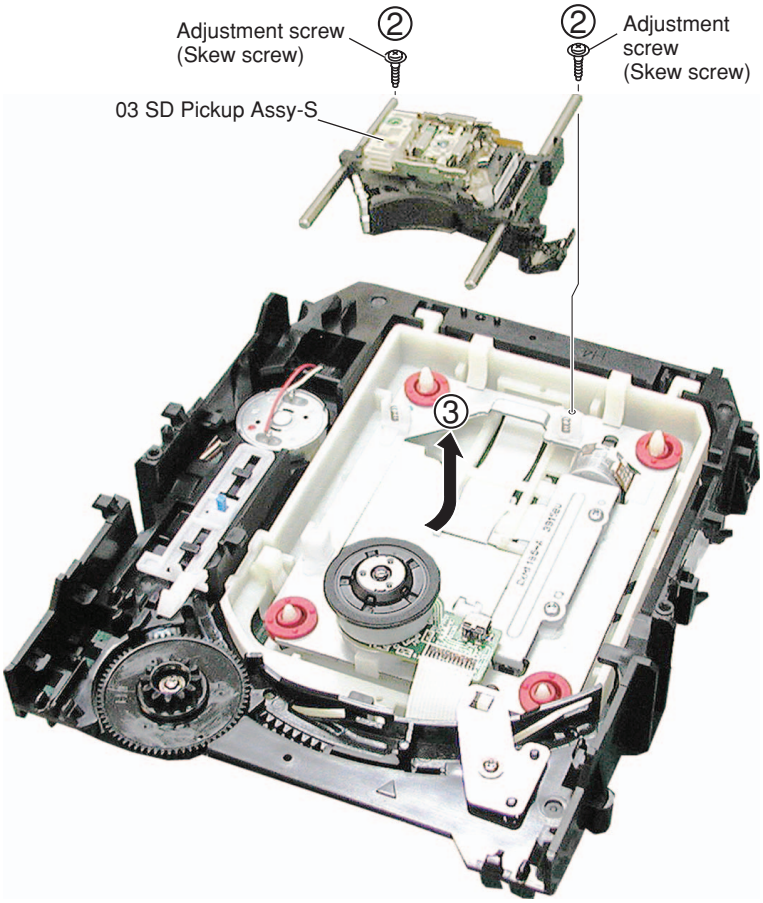
① Remove the flexible cable for the pickup.



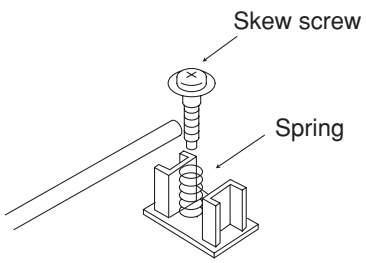
● Bottom View

② Remove the two adjustment screws.

③ Remove the 03 SD Pickup Assy-S.

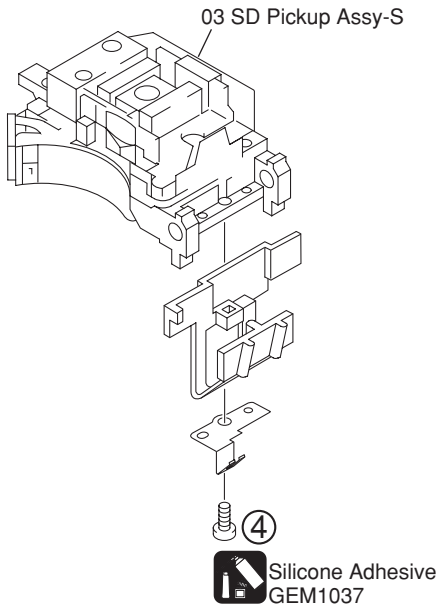


Note:
Be careful not to lose the spring for the skew screw.



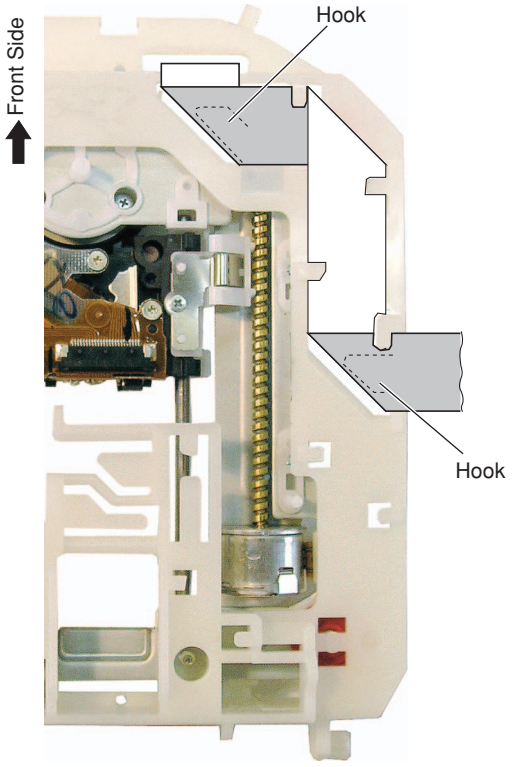
④ Remove the one screw.

Note: The screw is secured with the silicone adhesive. Make sure to apply the silicone adhesive after reattaching the screw.



Arrangement of the flexible cable for the spindle motor

: Conductive surface



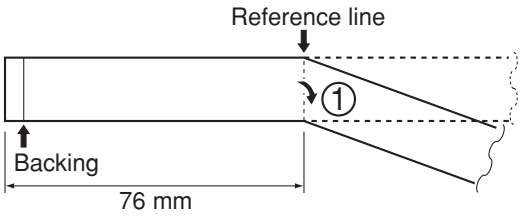
● Bottom View

Arrangement of the flexible cable for the pickup

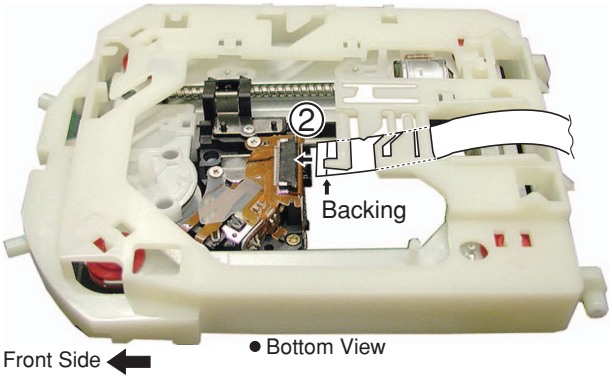
: Conductive surface

Note:
Be sure to move the 03 SD Pickup Assy-S to the innermost perimeter.

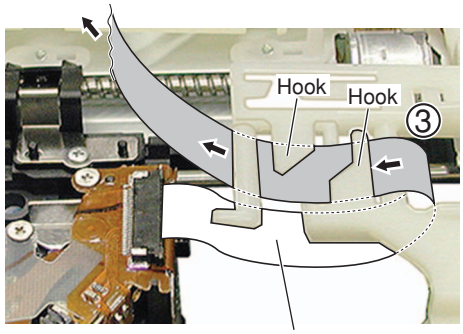
① Fold the flexible cable of pickup with the backing outward in the illustration below.



② Attach the flexible cable of the pickup to the connector.



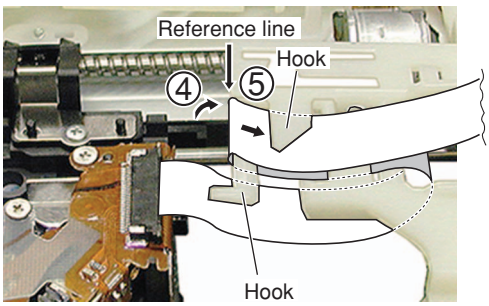
③ Pass the flexible cable through the hook.



Make sure that the cable is loose

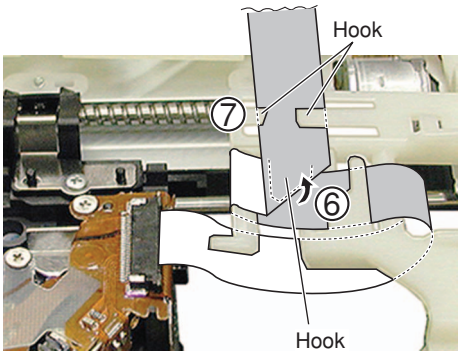
④ Hook the part folded in Step ① to the hook.

⑤ Pass the flexible cable through the hook.



⑥ Fold the flexible cable along the hook.

⑦ Pass the flexible cable through the hook.



7.2 IC

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

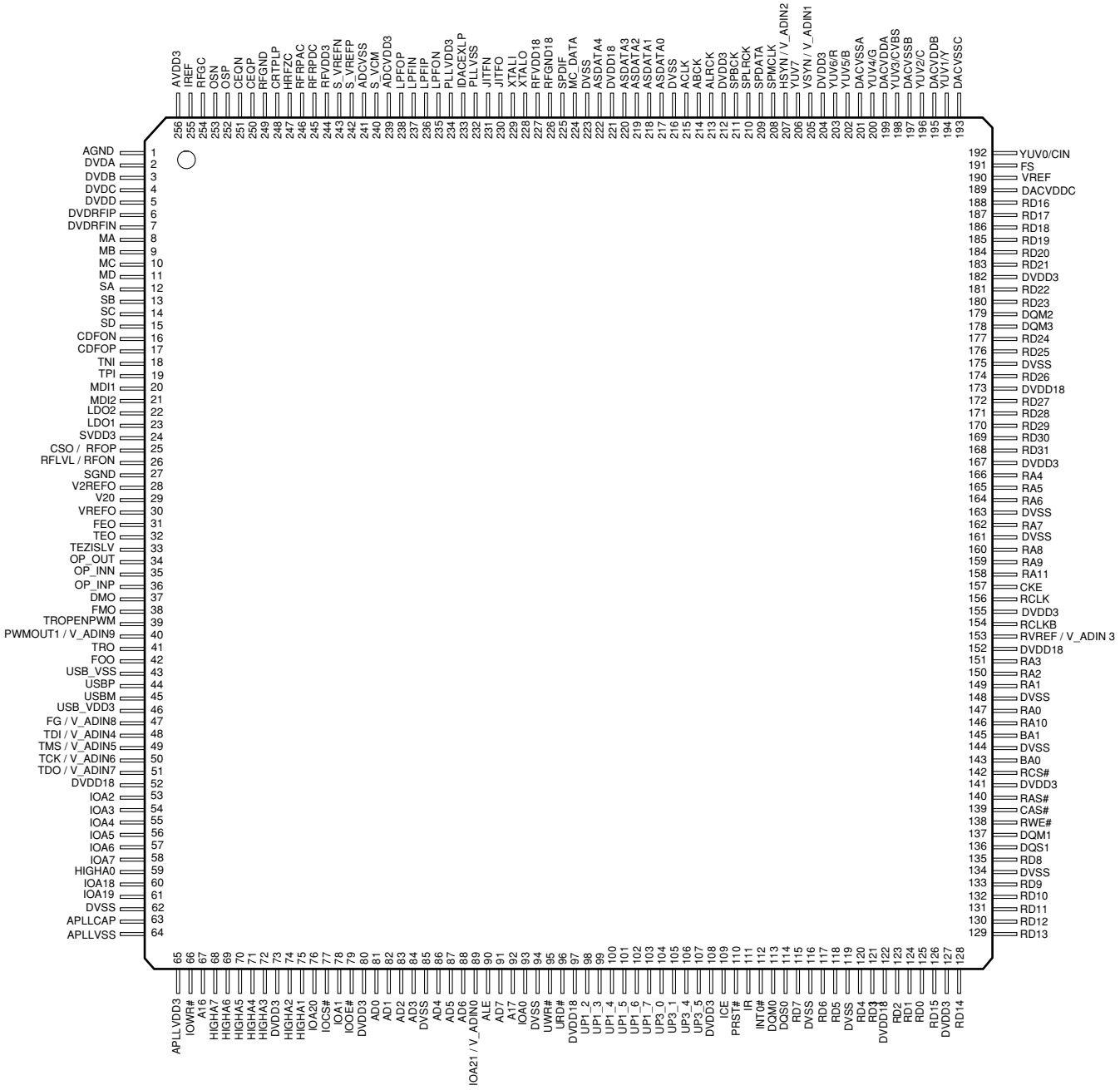
● **List of IC**

MT1389EE-L1

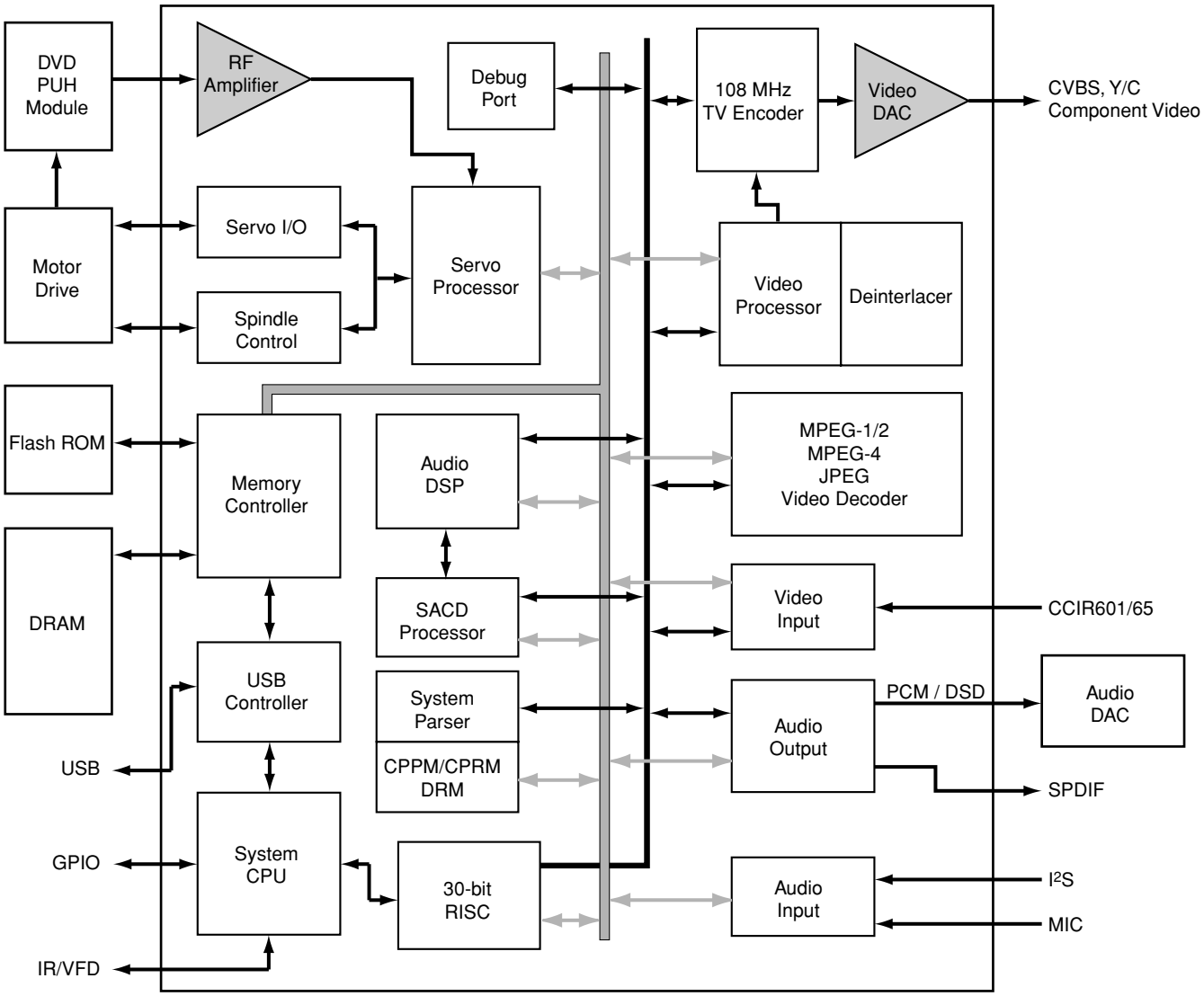
■ MT1389EE-L1 (DVDM ASSY : IC201)

• DVD IC

● **Pin Arrangement**



● Block Diagram



● Pin Function

■ RF Interface (28)

No.	Name	Alt.	I/O	Function
226	RFGND18		Ground	Analog ground
227	RFVDD18		Power	Analog power 1.8V
250	CEQP		Analog output	EQ offset loop capacitance
251	CEQN		Analog output	EQ offset loop capacitance
252	OSP		Analog output	RF Offset cancellation capacitor connecting
253	OSN		Analog output	RF Offset cancellation capacitor connecting
254	RFGC		Analog output	RF AGC loop capacitor connecting for DVD-ROM
255	IREF		Analog Input	Current reference input. It generates reference current for RF path. Connect an external 15K resistor to this pin and AVSS.
256	AVDD3		Power	Analog power 3.3V
1	AGND		Ground	Analog ground
2	DVDA		Analog Input	AC coupled input path A
3	DVDB		Analog Input	AC coupled input path B
4	DVDC		Analog Input	AC coupled input path C
5	DVDD		Analog Input	AC coupled input path D
6	DVDRFIP		Analog Input	AC coupled DVD RF signal input RFIP
7	DVDRFIN		Analog Input	AC coupled DVD RF signal input RFIN
8	MA		Analog Input	DC coupled main-beam RF signal input A
9	MB		Analog Input	DC coupled main-beam RF signal input B
10	MC		Analog Input	DC coupled main-beam RF signal input C
11	MD		Analog Input	DC coupled main-beam RF signal input D
12	SA		Analog Input	DC coupled sub-beam RF signal input A
13	SB		Analog Input	DC coupled sub-beam RF signal input B
14	SC		Analog Input	DC coupled sub-beam RF signal input C
15	SD		Analog Input	DC coupled sub-beam RF signal input D
16	CDFON		Analog Input	CD focusing error negative input
17	CDFOP		Analog Input	CD focusing error positive input
18	TNI		Analog Input	3 beam satellite PD signal negative input
19	TPI		Analog Input	3 beam satellite PD signal positive input

■ ALPC (4)

No.	Name	Alt.	I/O	Function
20	MDI1		Analog Input	Laser power monitor input
21	MDI2		Analog Input	Laser power monitor input
22	LDO2		Analog Output	Laser driver output
23	LDO1		Analog Output	Laser driver output

■ ADC for SACD (5)

No.	Name	Alt.	I/O	Function
239	ADCVDD3		Power	Analog 3.3V Power for ADC
240	S_VCM		Analog Inout	SACD- Common mode reference
241	ADCVSS		Ground	Analog ground for ADC
242	S_VREFP		Analog Inout	SACD- TOP Reference
243	S_VREFN		Analog Inout	SACD- Bottom Reference

■ Reference Voltage (3)

No.	Name	Alt.	I/O	Function
28	V2REFO		Analog output	Reference voltage 2.8V
29	V20		Analog output	Reference voltage 2.0V
30	VREFO		Analog output	Reference voltage 1.4V

■ Analog Monitor Output (7)

No.	Name	Alt.	I/O	Function
24	SVDD3		Power	Analog power 3.3V
25	CSO	RFOP	Analog output	Central servo Positive main beam summing output
26	RFLVL	RFON	Analog output	RFRP low pass, or Negative main beam summing output
27	SGND		Ground	Analog ground
31	FEO		Analog output	Focus error monitor output
32	TEO		Analog output	Tracking error monitor output
33	TEZISLV		Analog output	TE Slicing Level

■ Analog Servo Interface (6)

No.	Name	Alt.	I/O	Function
244	RFVDD3		Power	Analog Power
245	RFRPDC		Analog output	RF ripple detect output
246	RFRPAC		Analog Input	RF ripple detect input(through AC-coupling)
247	HRFZC		Analog Input	High frequency RF ripple zero crossing
248	CRTPLP		Analog output	Defect level filter capacitor connecting
249	RFGND		Ground	Analog Ground

■ RF Data PLL Interface (9)

No.	Name	Alt.	I/O	Function
230	JITFO		Analog output	The output terminal of RF jitter meter.
231	JITFN		Analog Input	The input terminal of RF jitter meter.
232	PLLVSS		Ground	Ground pin for data PLL and related analog circuitry.
233	IDACEXLP		Analog output	Data PLL DAC Low-pass filter
234	PLLVDD3		Power	Power pin for data PLL and related analog circuitry.
235	LPFON		Analog Output	The negative output of loop filter amplifier
236	LPFIP		Analog Input	The positive input terminal of loop filter amplifier.
237	LPFIN		Analog Input	The negative input terminal of loop filter amplifier.
238	LPFOP		Analog Output	The positive output of loop filter amplifier

■ Motor and Actuator Driver Interface (10)

No.	Name	Alt.	I/O	Function
34	OP_OUT		Analog output	Op amp output.
35	OP_INN		Analog input	Op amp negative input
36	OP_INP		Analog input	Op amp positive input
37	DMO		Analog Output	Disk motor control output. PWM output.
38	FMO		Analog Output	Feed motor control. PWM output.
39	TROPENPWM		Analog Output	Tray PWM output / Tray open output.
40	PWMOUT1	V_ADIN9	Analog Output	1st General PWM output, or Version AD input 9
41	TRO		Analog Output	Tracking servo output. PDM output of tracking servo compensator.
42	FOO		Analog Output	Focus servo output. PDM output of focus servo compensator
47	FG (Digital pin)	V_ADIN8	LVTTL 3.3V Input, Schmitt Input, pull-up , with analog input path for V_ADIN8	Motor Hall sensor input, or Version AD input 8

■ General Power / Ground (32)

No.	Name	Alt.	I/O	Function
52, 97, 122, 152, 173, 221	DVDD18		Power	1.8V power pin for internal digital circuitry
85, 116, 144, 163, 216	DVSS		Ground	1.8V Ground pin for internal digital circuitry
73, 80, 108, 127, 141, 155, 167, 182, 212	DVDD3		Power	3.3V power pin for internal digital circuitry
62, 94, 119, 134, 148, 161, 175, 223	DVSS		Ground	3.3V Ground pin for internal digital circuitry
204	DVDD3		Power	3.3V power pin Video DAC digital circuitry only
63	APLLCAP		Analog Inout	APLL External Capacitance connection
64	APLLVSS		Ground	Ground pin for audio clock circuitry
65	APLLVDD3		Power	3.3V Power pin for audio clock circuitry

■ Micro Controller and Flash Interface (48)

No.	Name	Alt.	I/O	Function
59	HIGHA0		Inout, 2-16MA, SR, PU	Microcontroller address 8
75	HIGHA1		Inout, 2-16MA, SR, PU	Microcontroller address 9
74	HIGHA2		Inout, 2-16MA, SR, PU	Microcontroller address 10
72	HIGHA3		Inout, 2-16MA, SR, PU	Microcontroller address 11
71	HIGHA4		Inout, 2-16MA, SR, PU	Microcontroller address 12
70	HIGHA5		Inout, 2-16MA, SR, PU	Microcontroller address 13
69	HIGHA6		Inout, 2-16MA, SR, PU	Microcontroller address 14
68	HIGHA7		Inout, 2-16MA, SR, PU	Microcontroller address 15
91	AD7		Inout, 2-16MA, SR	Microcontroller address/data 7
88	AD6		Inout, 2-16MA, SR	Microcontroller address/data 6
87	AD5		Inout, 2-16MA, SR	Microcontroller address/data 5
86	AD4		Inout, 2-16MA, SR	Microcontroller address/data 4
84	AD3		Inout, 2-16MA, SR	Microcontroller address/data 3
83	AD2		Inout, 2-16MA, SR	Microcontroller address/data 2
82	AD1		Inout, 2-16MA, SR	Microcontroller address/data 1
81	AD0		Inout, 2-16MA, SR	Microcontroller address/data 0
93	IOA0		Inout, 2-16MA, SR, PU	Microcontroller address 0 / IO
78	IOA1		Inout, 2-16MA, SR, PU	Microcontroller address 1 / IO
53	IOA2		Inout, 2-16MA, SR, PU	Microcontroller address 2 / IO
54	IOA3		Inout, 2-16MA, SR, PU	Microcontroller address 3 / IO
55	IOA4		Inout, 2-16MA, SR, PU	Microcontroller address 4 / IO
56	IOA5		Inout, 2-16MA, SR, PU	Microcontroller address 5 / IO
57	IOA6		Inout, 2-16MA, SR, PU	Microcontroller address 6 / IO
58	IOA7		Inout, 2-16MA, SR, PU	Microcontroller address 7 / IO
67	A16		Output, 2-16MA, SR	Flash address 16
92	A17		Output, 2-16MA, SR	Flash address 17
60	IOA18		Inout, 2-16MA, SR, SMT	Flash address 18 / IO
61	IOA19		Inout, 2-16MA, SR, SMT	Flash address 19 / IO
76	IOA20		Inout, 2-16MA, SR, SMT	Flash address 20 / IO
89	IOA21	V_ADIN0	Inout, 2-16MA, SR, SMT	Flash address 21 / IO While External FLASH size <= 2MB: Version AD input port 0, or GPIO

No.	Name	Alt.	I/O	Function
90	ALE		Inout, 2-16MA, SR, PU, SMT	Microcontroller address latch enable
79	IOOE#		Inout, 2-16MA, SR, SMT	Flash output enable, active low / IO
66	IOWR#		Inout, 2-16MA, SR, SMT	Flash write enable, active low / IO
77	IOCS#		Inout, 2-16MA, SR, PU, SMT	Flash chip select, active low / IO
95	UWR#		Inout, 2-16MA, SR, PU, SMT	Microcontroller write strobe, active low
96	URD#		Inout, 2-16MA, SR, PU, SMT	Microcontroller read strobe, active low
98	UP1_2		Inout, 4MA, SR, PU, SMT	Microcontroller port 1-2
99	UP1_3		Inout, 4MA, SR, PU, SMT	Microcontroller port 1-3
100	UP1_4		Inout, 4MA, SR, PU, SMT	Microcontroller port 1-4
101	UP1_5		Inout, 4MA, SR, PU, SMT	Microcontroller port 1-5
102	UP1_6	SCL	Inout, 4MA, SR, PU, SMT	Microcontroller port 1-6 I^2C clock pin
103	UP1_7	SDA	Inout, 4MA, SR, PU, SMT	Microcontroller port 1-7 I^2C data pin
104	UP3_0	RXD	Inout, 4MA, SR, PU, SMT	Microcontroller port 3-0 8032 RS232 RXD
105	UP3_1	TXD	Inout, 4MA, SR, PU, SMT	Microcontroller port 3-1 8032 RS232 TXD
106	UP3_4	RXD SCL	Inout, 4MA, SR, PU, SMT	Microcontroller port 3-4 Hardwired RD232 RXD I^2C clock pin
107	UP3_5	TXD SDA	Inout, 4MA, SR, PU, SMT	Microcontroller port 3-5 Hardwired RD232 TXD I^2C data pin
111	IR		Input, SMT	IR control signal input
112	INT0#		Inout, 2-16MA, SR, PU, SMT	Microcontroller external interrupt 0, active low

■ Audio Interface (14)

No.	Name	Alt.	I/O	Function
208	SPMCLK	SCLK0	Inout	Audio DAC master clock of SPDIF input While SPDIF input is not used: Serial interface port 0 clock pin GPIO
209	SPDATA	SDIN0	Inout	Audio data of SPDIF input While SPDIF input is not used: Serial interface port 0 data-in GPIO
210	SPLRCK	SDO0	Inout	Audio left/right channel clock of SPDIF input While SPDIF input is not used: Serial interface port 0 data-out GPIO
211	SPBCK	SDCS0 ASDATA5	Inout	Audio bit clock of SPDIF input While SPDIF input is not used: Serial interface port 0 chip select Audio serial data 5 part I : DSD data sub-woofer channel or Microphone output GPIO
213	ALRCK		Inout 4MA, PD, SMT	Audio left/right channel clock Trap value in power-on reset: 1 : use external 373 0: use internal 373
214	ABCK	Fs64	Output 4MA	Audio bit clock Phase de-modulation
215	ACLK		Inout, 4MA	Audio DAC master clock
217	ASDATA0		Inout, 4MA, PD SMT	Audio serial data 0 (Front-Left/Front-Right) DSD data left channel Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation
218	ASDATA1		Inout, 4MA, PD SMT	Audio serial data 1 (Left-Surround/Right-Surround) DSD data right channel Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation While only 2 channels output: GPIO
219	ASDATA2		Inout, 4MA, PD SMT	Audio serial data 2 (Center/LFE) DSD data left surround channel Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation While only 2 channels output: GPIO
220	ASDATA3		Inout, 4MA, PD SMT	Audio serial data 3 (Center-back/ Center-left-back/Center-right-back, in 6.1 or 7.1 mode) DSD data right surround channel Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation While only 2 channels output: GPIO
222	ASDATA4	INT1#	Inout, 4MA, PD SMT	Audio serial data 4 (Down-mixed Left/Right) DSD data center channel Trap value in power-on reset : 1 : manufactory test mode 0 : normal operation While only 2 channels output: Microcontroller external interrupt 1 GPIO
224	MC_DATA	INT2#	Inout	Microphone serial input While not support Microphone: Microcontroller external interrupt 2 GPIO
225	SPDIF		Output, 2-16MA, SR : ON/OFF	SPDIF output

Video Interface (18)

No.	Name	Alt.	I/O	Function
189	DACVDDC		Power	3.3V power pin for VIDEO DAC circuitry
190	VREF		Analog	Bandgap reference voltage
191	FS		Analog	Full scale adjustment
192	YUV0	CIN	Output 4MA, SR	Video data output bit 0 Compensation capacitor
193	DACVSSC		Ground	Ground pin for VIDEO DAC circuitry
194	YUV1	Y	Output 4MA, SR	Video data output bit 1 Analog Y output
195	DACVDDB		Power	3.3V power pin for VIDEO DAC circuitry
196	YUV2	C	Output 4MA, SR	Video data output bit 2 Analog chroma output
197	DACVSSB		Ground	Ground pin for VIDEO DAC circuitry
198	YUV3	CVBS	Output 4MA, SR	Video data output bit 3 Analog composite output
199	DACVDDA		Power	3.3V power pin for VIDEO DAC circuitry
200	YUV4	Y/G	Output 4MA, SR	Video data output bit 4 Green or Y
201	DACVSSA		Ground	Ground pin for VIDEO DAC circuitry
202	YUV5	B/Cb/Pb	Output 4MA, SR	Video data output bit 5 Blue or CB
203	YUV6	R/Cr/Pr	Output 4MA, SR	Video data output bit 6 Red or CR
205	VSYN	V_ADIN1	Inout 4MA, SR SMT	Vertical sync input/output While no External TV-encoder: Vertical sync for video-input Version AD input port 1 GPIO
206	YUV7	INT3# ASDATA5	Inout 4MA, SR SMT	Video data output bit 7 While no External TV-encoder: Microcontroller external interrupt 3 Audio serial data 5 part II : DSD data sub-woofer channel or Microphone output GPIO
207	HSYN	INT4# V_ADIN2	Inout 4MA, SR SMT	Horizontal sync input/output While no External TV-encoder: Horizontal sync for video-input Microcontroller external interrupt 4 Version AD input port 2 GPIO

MISC (8)

No.	Name	Alt.	I/O	Function
43	USB_VSS		USB Ground	USB ground pin
44	USBP		Analog Inout	USB port DPLUS analog pin
45	USBM		Analog Inout	USB port DMINUS analog pin
46	USB_VDD3		USB Power	USB Power pin 3.3V
110	PRST#		Input PU, SMT	Power on reset input, active low
109	ICE		Input PD, SMT	Microcontroller ICE mode enable
228	XTALO		Output	27M crystal out
229	XTALI		Input	27M crystal in

■ **DRAM Interface (63)(sorted by position)**

No.	Name	Alt.	I/O	Function
188	RD16	LLC_CLK SMPTE_C[0]	Inout Pull-Down	DRAM data 16 While using 16-bits wide DRAM: Line Locked Clock input/output Digital Video output C bit 0 GPIO
187	RD17	YUVIN0 SMPTE_C[1]	Inout Pull-Down	DRAM data 17 While using 16-bits wide DRAM: Video input data 0 Digital Video output C bit 1 GPIO
186	RD18	YUVIN1 SMPTE_C[2]	Inout Pull-Down	DRAM data 18 While using 16-bits wide DRAM: Video input data 1 Digital Video output C bit 2 GPIO
185	RD19	YUVIN2 SMPTE_C[3]	Inout Pull-Down	DRAM data 19 While using 16-bits wide DRAM: Video input data 2 Digital Video output C bit 3 GPIO
184	RD20	YUVIN3 SMPTE_C[4]	Inout Pull-Down	DRAM data 20 While using 16-bits wide DRAM: Video input data 3 Digital Video output C bit 4 GPIO
183	RD21	YUVIN4 SMPTE_C[5]	Inout Pull-Down	DRAM data 21 While using 16-bits wide DRAM: Video input data 4 Digital Video output C bit 5 GPIO
181	RD22	YUVIN5 SMPTE_C[6]	Inout Pull-Down	DRAM data 22 While using 16-bits wide DRAM: Video input data 5 Digital Video output C bit 6 GPIO
180	RD23	YUVIN6 SMPTE_C[7]	Inout Pull-Down	DRAM data 23 While using 16-bits wide DRAM: Video input data 6 Digital Video output C bit 7 GPIO
179	DQM2	YUVIN7	Inout Pull-Up	Data Mask 2 While using 16-bits wide DRAM: Video input data 7 GPIO
178	DQM3	INT6# SMPTE_CLK USB_CLK	Inout Pull-Up	Data Mask 3 While using 16-bits wide DRAM: Microcontroller external interrupt 6 Digital Video output Clock USB port CLK input (48MHz) part II GPIO
177	RD24	SDIN1 MS_BS SMPTE_Y[0]	Inout Non-pull	DRAM data 24 While using 16-bits wide DRAM: Serial interface port 1 data-in MS Card BS pin part II Digital Video output Y bit 0 GPIO
176	RD25	SDO1 MS_SDIO SMPTE_Y[1]	Inout Non-pull	DRAM data 25 While using 16-bits wide DRAM: Serial interface port 1 data-out MS Card SDIO pin part II Digital Video output Y bit 1 GPIO

No.	Name	Alt.	I/O	Function
174	RD26	SDCS1 MSCLK SMPTE_Y[2]	Inout Non-pull	DRAM data 26 While using 16-bits wide DRAM: Serial interface port 1 chip select Memory Stick Clock part II Digital Video output Y bit 2 GPIO
172	RD27	SCLK2 SDCLK SMPTE_Y[3]	Inout Non-pull	DRAM data 27 While using 16-bits wide DRAM: Serial interface port 2 clock pin Security Disk Clock part II Digital Video output Y bit 3 GPIO
171	RD28	SDIN2 SD_CMD SMPTE_Y[4]	Inout Non-pull	DRAM data 28 While using 16-bits wide DRAM: Serial interface port 2 data-in SD Card CMD pin part II Digital Video output Y bit 4 GPIO
170	RD29	SDO2 SD_DAT SMPTE_Y[5]	Inout Non-pull	DRAM data 29 While using 16-bits wide DRAM: Serial interface port 2 data-out SD Card Data pin part II Digital Video output Y bit 5 GPIO
169	RD30	SDCS2 SMPTE_Y[6]	Inout Pull-Up	DRAM data 30 While using 16-bits wide DRAM: Serial interface port 2 chip select Digital Video output Y bit 6 GPIO
168	RD31	INT5# ASDATA5 SMPTE_Y[7]	Inout Pull-Up	DRAM data 31 While using 16-bits wide DRAM: Microcontroller external interrupt 5 Audio serial data 5 part III : DSD data sub-woofer channel or Microphone output Digital Video output Y bit 7 GPIO
166	RA4		Inout	DRAM address 4
165	RA5		Inout	DRAM address 5
164	RA6		Inout	DRAM address 6
162	RA7		Inout	DRAM address 7
160	RA8		Inout	DRAM address 8
159	RA9		Inout	DRAM address 9
158	RA11	GPIO	Inout Pull-Down	DRAM address bit 11 While using DRAM size <=4MB: GPIO
157	CKE		output	DRAM clock enable
156	RCLK		Inout	DRAM clock
154	RCLKB	USB_CLK	Inout	DRAM clock invert While not using DDR: I) USB port CLK input (48MHz) part I
153	RVREF	V_ADIN3	Analog Inout	Reference voltage for DDR DRAM While not using DDR : Version AD input port 3
151	RA3		Inout	DRAM address 3
150	RA2		Inout	DRAM address 2
149	RA1		Inout	DRAM address 1
147	RA0		Inout	DRAM address 0
146	RA10		Inout	DRAM address 10
145	BA1		Inout	DRAM bank address 1
143	BA0		Inout	DRAM bank address 0

No.	Name	Alt.	I/O	Function
142	RCS#		output	DRAM chip select, active low
140	RAS#		output	DRAM row address strobe, active low
139	CAS#		output	DRAM column address strobe, active low
138	RWE#		output	DRAM Write enable, active low
137	DQM1		Inout	Data mask 1
136	DQS1	INT7# MS_BS	Inout	Data strobe 1 for DDR DRAM While not using DDR: Microcontroller external interrupt 7 MS Card BS pin part I GPIO
135	RD8		Inout	DRAM data 8
133	RD9		Inout	DRAM data 9
132	RD10		Inout	DRAM data 10
131	RD11		Inout	DRAM data 11
130	RD12		Inout	DRAM data 12
129	RD13		Inout	DRAM data 13
128	RD14		Inout	DRAM data 14
126	RD15		Inout	DRAM data 15
125	RD0		Inout	DRAM data 0
124	RD1		Inout	DRAM data 1
123	RD2		Inout	DRAM data 2
121	RD3		Inout	DRAM data 3
120	RD4		Inout	DRAM data 4
118	RD5		Inout	DRAM data 5
117	RD6		Inout	DRAM data 6
115	RD7		Inout	DRAM data 7
114	DQS0	SCLK1 MS_SDIO	Inout	Data strobe 0 for DDR DRAM While not using DDR: Serial interface port 1 clock pin MS Card SDIO pin part I GPIO
113	DQM0		Inout	Data mask 0

■ JTAG Interface (4)

No.	Name	Alt.	I/O	Function
48	TDI	SDO3 V_ADIN4 SD_DAT	Inout	JTAG data in While not using Boundary Scan: Serial interface port 3 data-out Version AD input port 4 SD Card Data pin part I GPIO
49	TMS	SDIN3 V_ADIN5 SD_CMD	Inout	While not using Boundary Scan: Serial interface port 3 data-in Version AD input port 5 SD Card CMD pin part I GPIO
50	TCK	SCLK3 V_ADIN6 SDCLK	Inout	JTAG clock While not using Boundary Scan: Serial interface port 3 clock pin Version AD input port 6 Security Disk Clock part I GPIO
51	TDO	SDCS3 V_ADIN7 MSCLK	Inout	JTAG data out While not using Boundary Scan: Serial interface port 3 chip-select Version AD input port 7 Memory Stick Clock part I GPIO

Disc/content format playback compatibility

This player is compatible with a wide range of disc types (media) and formats. Playable discs will generally feature one of the following logos on the disc and/or disc packaging. Note however that some disc types, such as recordable CD and DVD, may be in an unplayable format—see below for further compatibility information.

Please also note that recordable discs cannot be recorded using this player.

DVD-Video DVD-R DVD-RW

Audio CD Video CD CD-R CD-RW

Fujicolor CD

- *is a trademark of Fuji Photo Film Co. Ltd.*
- Also compatible with KODAK Picture CD

This player supports the IEC's Super VCD standard. Compared to the Video CD standard, Super VCD offers superior picture quality, and allows two stereo soundtracks to be recorded. Super VCD also supports the widescreen size.

Super VCD

CD-R/RW compatibility

- Compatible formats: CD-Audio, Video CD/ Super VCD, ISO 9660 CD-ROM* containing MP3, WMA, JPEG or DivX video files
  ** ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1. Romeo and Joliet file systems are both compatible with this player.*
- Multi-session playback: No
- Unfinalized disc playback: No
- File structure: Up to 299 folders; up to 648 folders and files combined

DVD-R/RW compatibility

- Compatible formats: DVD-Video, Video Recording (VR)*
  ** Edit points may not play exactly as edited; screen may go momentarily blank at edited points.*
- Unfinalized playback: No
- WMA/MP3/JPEG file playback on DVD-R/ RW: No

Compressed audio compatibility

- Compatible formats: MPEG-1 Audio Layer 3 (MP3), Windows Media Audio (WMA)
- Sampling rates: 32, 44.1 or 48kHz
- Bit-rates: Any (128Kbps or higher recommended)
- VBR (variable bit rate) MP3 playback: No
- VBR WMA playback: No
- WMA lossless encoding compatible: No
- DRM (Digital Rights Management) compatible: Yes (DRM-protected audio files will *not* play in this player)
- File extensions: .mp3, .wma (these must be used for the player to recognize MP3 and WMA files – do not use for other file types)

About WMA

The Windows Media® logo printed on the box indicates that this player can playback Windows Media Audio content.

WMA is an acronym for Windows Media Audio and refers to an audio compression technology developed by Microsoft Corporation. WMA content can be encoded by using Windows Media® Player version 7, 7.1, Windows Media® Player for Windows® XP, or Windows Media® Player 9 Series.

Microsoft, Windows Media, and the Windows logo are trademarks, or registered trademarks of Microsoft Corporation in the United States and/or other countries.

About DivX

DivX is a compressed digital video format created by the DivX® video codec from DivXNetworks, Inc. This player can play DivX video files burned on CD-R/RW/ROM discs. Keeping the same terminology as DVD-Video, individual DivX video files are called "Titles." When naming files/titles on a CD-R/RW disc prior to burning, keep in mind that by default they will be played in alphabetical order.

DivX video compatibility

- Official DivX® Certified product.
- Plays DivX® 5, DivX® 4, DivX® 3 and DivX® VOD video content (in compliance with DivX® Certified technical requirements).
- File extensions: .avi and .divx (these must be used for the player to recognize DivX video files). *Note that all files with the .avi extension are recognized as MPEG4, but not all of these are necessarily DivX video files and therefore may not be playable on this player.*

DivX, DivX Certified, and associated logos are trademarks of DivXNetworks, Inc. and are used under license.

JPEG file compatibility

- Compatible formats: Baseline JPEG and EXIF 2.2* still image files up to a resultion of 3072 x 2048.
  **File format used by digital still cameras*
- Progressive JPEG compatible: No
- File extensions: .jpg (must be used for the player to recognize JPEG files – do not use for other file types)
- File structure: Up to 299 folders; up to 648 folders and files combined

PC-created disc compatibility

Discs recorded using a personal computer may not be playable in this unit due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.

Discs recorded in packet write mode (UDF format) are not compatible with this player.

Check the DVD-R/RW or CD-R/RW software disc boxes for additional compatibility information.

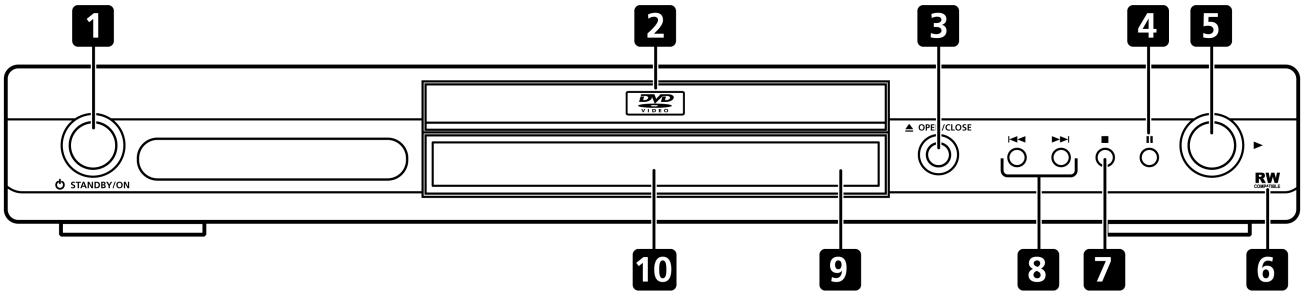
7.4 CLEANING

Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

Position to be cleaned	Cleaning tools
Pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

8. PANEL FACILITIES

Front panel



1 ⏻ STANDBY/ON

2 Disc tray

3 ⏏ OPEN/CLOSE

4 ⏸

5 ▶

6 RW Compatible

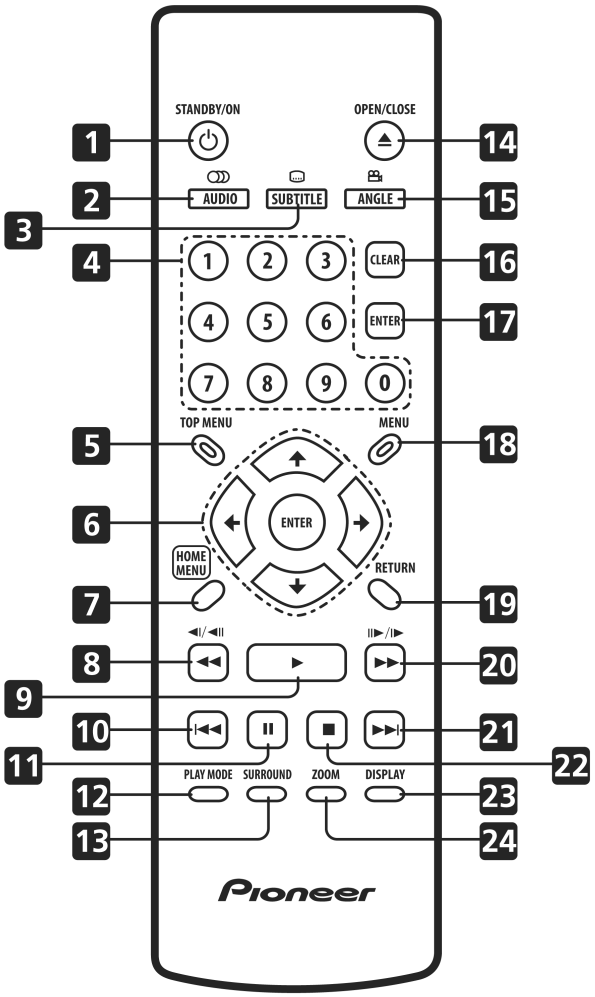
7 ■

8 ⏮ and ⏭

9 Remote control sensor

10 Display

Remote control



1 ⏻ STANDBY/ON

2 AUDIO

3 SUBTITLE

4 Number buttons

5 TOP MENU

6 ENTER & cursor buttons

7 HOME MENU

8 ◄◄ and ◄I/◄II

9 ►

10 I◄◄

11 II

12 PLAY MODE

13 SURROUND

14 ⏏ OPEN/CLOSE

15 ANGLE

16 CLEAR

17 ENTER

18 MENU

19 RETURN

20 ►► and I►/II►

21 ►►I

22 ■

23 DISPLAY

24 ZOOM

Using the remote control

Keep in mind the following when using the remote control:

- Make sure that there are no obstacles between the remote and the remote sensor on the unit.
- The remote has a range of about 7m (23ft.).
- Remote operation may become unreliable if strong sunlight or fluorescent light is shining on the unit's remote sensor.
- Remote controllers for different devices can interfere with each other. Avoid using remotes for other equipment located close to this unit.
- Replace the batteries when you notice a fall off in the operating range of the remote.

A

B

C

D

E

F

■ Jigs list

Name	Jig No.	Remarks
Service Remote Control Unit	GGF1381	diagnosis
DVD Data Disc	GGV1175 (& GGV1171)	diagnosis (ID data setting) • GGV1175 is to be released in May, 2004. Use only GGV1175 after GGV1175 was released because GGV1175 includes all the data of GGV1171.
DVD Test Disc (DVD-Video)	GGV1025	Check of DVD-Video
CD Test Disc	STD-905	Check of CD